Hutton + Rostron
Environmental Investigations Limited

4 Maids of Honour Row: Phase 2, Timber condition investigation

Site note 5 for 30 August 2023, job no. 157-65

CONTENTS

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1 INTRODUCTION

1.1 AUTHORITY AND REFERENCES

Hutton + Rostron Environmental Investigations Limited carried out a site visit to 4 Maids of Honour Row on 30 August 2023 in accordance with instructions from Fiona McDaniel by email, on 1 August 2023 (11:26) on behalf of the client. Drawings provided by McDaniel Woolf were used for the identification of structures. For the purpose of orientation in this report, the building was taken as facing north onto Richmond Green

1.2 AIM

The aim of this survey was to investigate the historic timber floor, roof, lintel and panelling structures to prescribed openings/areas throughout the property so as to determine the respective structures construction and condition, and where appropriate, to provide cost effective, holistic and historically sympathetic remedial recommendations for their repair and maintenance

1.3 LIMITATIONS

This survey was confined to the accessible structures. Concealed timbers and cavities have been investigated where necessary by the use of high-powered fibre optics or thermal imaging equipment. The condition of concealed timbers may be deduced from the general condition and moisture content of the adjacent structure. Only demolition or exposure work can enable the condition of timber to be determined with certainty, and this destroys what it is intended to preserve. Specialist investigative techniques are therefore employed as aids to the surveyor. No such technique can be 100 per cent reliable, but their use allows deductions to be made about the most probable condition of materials at the time of examination. Structures were not examined in detail except as described in this report, and no liability can be accepted for defects that may exist in other parts of the building. We have not inspected any parts of the structure which are covered, unexposed or inaccessible and we are therefore unable to report that any such part of the property is free from defect or in the event that such part of the property is not free from defect it will not contaminate and/or affect any other part of the property. Any design work carried out in conjunction with this report has taken account of available pre-construction or construction phase information to assist in the management of health and safety risks. The sample remedial details and other recommendations in this report are included to advise and inform the design team appointed by the client. The contents of this report do not imply the adoption of the role of Principal Designer by H+R for the purposes of the Construction (Design and Management) (CDM) Regulations 2015. No formal investigation of moisture distribution was made

2 STAFF ON SITE AND CONTACTS

2.1 H+R STAFF ON SITE

Andrew Ellis
Bradley Fisher

2.2 PERSONNEL CONTACTED

Grant Reid – Client and homeowner
Richard Woolf - McDaniel Woolf
Fiona McDaniel - McDaniel Woolf
David Harrison - McDaniel Woolf

3 OBSERVATIONS AND *RECOMMENDATIONS*

3.1 OPENING P2 - BASEMENT DINING ROOM FLOOR

3.1.1 Construction

Non-historic softwood timber floor structures formed of east-west orientated floor joists laid onto perpendicular floor plates, which were themselves supported onto an apparently historic masonry sleeper wall bearing onto compacted earth. Floor plates were separated from the presumably damp masonry sleeper walls via a ~3mm thick bituminous damp-proof membrane. Floorboards were assumed to date from the same period as the introduction of the south-east 'dumb-waiter' lift circa mid to early 20th century. No formal species identification was undertaken although structural timbers were assessed to be of *Picea* genus*,* most probably *Picea abies* or more commonly referred to as Norway Spruce. Floor boards assumed to be of *Pinus genus*, most probably *Pinus sylvestris* or European Redwood. The following constructional elements and their dimensions were recorded;

Floor joists ~45x75mm at 400mm centres
Floor plate ~75x75mm
Floorboards ~145x20mm

3.1.2 Condition

No decay identified or anticipated to inaccessible areas. Existing damp proof membrane still effective and well within its remaining service lifespan. Surface and deep moisture contents too low to support decay organisms. However, floor void towards the external north perimeter wall visibly subject to excessive building debris which may be restricting suitable ventilation as well as potentially bridging moisture between the damp compacted earth and the timber floor plate

No immediate action required. Should floor structures be retained, allow for the removal of excessive building debris within floor voids and the clearing/maintenance of ventilation pathways via air-bricks towards the north elevation

3.2 OPENING P4 - GROUND FLOOR ENTRANCE HALLWAY FLOOR

3.2.1 Construction

Historic floor structure of mixed hardwood and softwood construction. Floor structural build-up was of 'double floor' construction whereby primary north-south orientated floor beams supported secondary beams which in turn carried separate floor and ceiling joist arrangements. A point of constructional historic interest was noted whereby the floor joists were laid or lapped over the secondary beams and were of much inferior quality timber than the ceiling joists which were tenoned at both ends (suggesting they were installed during the initial phase of construction) to the secondary beams. This arrangement would typically be reversed in an archetypal double floor structure with floor joists of superior stock (as compared to ceiling joists) and tenoned into the beams with the ceiling joists lapped to the underside of beams (or fitted into pulley-chase mortises). Further to this non-typical arrangement was that the underside to the ceiling joists, secondary and primary beams were flush faced, again suggesting the floor had been reversed. No formal species identification was undertaken although primary and secondary beams were assessed to be of *Quercus* genus*,* most probably *Quercus robur* or more commonly referred to as English common oak. Floorboards, ceiling joists and floor joists were assumed to be of *Pinus* genus, most probably *Pinus sylvestris* or European Redwood. The following constructional elements and their dimensions were recorded;

Primary beam (oak) ~210x150mm
Secondary beam (oak) ~190x130mm

Ceiling joists (softwood) ~85x70mm at 400mm centres
Floor joists (softwood) - variable but approximately at ~110x70mm
Floorboards (softwood) ~25x260mm

3.2.2 Condition

No decay identified to accessible areas. Some visible damp staining to the inaccessible north perimeter secondary beams east bearing end, although this was generally assumed to be of historic origin and not presumed to be of structural significance. Surface and deep moisture contents to vulnerable and representative timbers too low to support decay organisms

No immediate action required. Should further exposure works occur to floorboards or ceiling soffits, it is advisable that all perimeter timbers to external walls be assessed for their condition. Also then allow for the removal of any excessive building debris within floor voids and the clearing/maintenance of ventilation pathways towards the north elevation

3.3 OPENING P5- BASEMENT KITCHEN LINTEL

3.3.1 Construction

Historic oak internal lintel structures to the north-east 2no. window apertures spanning between brick piers. Lintels formed of 2no. timbers with the innermost lintel providing the bulk of the structural loading and the central lintel primarily forming a packing element to account for masonry wall depth. The following constructional elements and their dimensions were recorded;

Inner primary lintel (oak) ~120x180mm
Centre filler lintel (oak) ~100x75mm

3.3.2 Condition

No structural decay detected. Deep moisture contents recorded as dry at <10 per cent despite vulnerability to active failure to the north-east downpipe

Subject to no further moisture penetration to the façade from the historically failed north-east, no immediate action required

3.4 OPENING P6- FIRST FLOOR RECEPTION FLOOR

3.4.1 Construction

Historic floor structure of mixed hardwood and softwood construction. Floor structural build-up was of ‘single floor’ construction whereby primary north-south orientated floor beams supported perpendicular east-west floor joists. Floor joists meeting the east internal party wall did not appear to be supported onto a timber wall plate but were instead directly embedded into masonry pockets and apparently partnered against protruding party floor joists embedded to the full depth to the party wall. Also note, ground floor north-east lintel accessible for deep drilling and probing from P6. Lintel of timber construction. Apparently, softwood. Dimensions not accessible. No formal species identification was undertaken although primary beams were presumed to be of *Quercus* genus*,* most probably *Quercus robur* or more commonly referred to as English common oak. Floorboards and floor joists were assumed to be of *Pinus genus*, most probably *Pinus sylvestris* or European Redwood. The following constructional elements and their dimensions were recorded;

Primary beam - N/A
Floor joists (softwood) ~210x55mm at 480mm centres

Floorboards (softwood) ~25x240mm
Lintel - N/A

3.4.2 Condition

No decay identified to accessible areas to floor or lintel structures. Some visible damp staining to the inaccessible north-east floor joists east bearing end, although this was generally assumed to be of historic origin and not presumed to be of structural significance. Surface and deep moisture contents to vulnerable and representative timbers too low to support decay organisms

No immediate action required

3.5 OPENING P7- FIRST FLOOR RECEPTION NORTH-EAST PANELLING

3.5.1 Construction

Historic panelling of conventional Georgian era construction whereby recessed panels were held within framed stiles and rails. Framed stiles and rails were jointed with morticed and tenoned joints and held with ~8-10mm pegs. Panels were chamfered to their back faces to slot into the ~5mm wide by ~8mm deep frame rebated slots. Panels were not fixed but designed to be fitted loosely and located into their rebated housing allowing free movement during thermal expansion and contraction. Moulded rail to suggest dado height in ogee profile. (assumed to be of a later addition). All panel moulding was apparently of ovolo profile. All panelling was assumed to be of softwood construction. The microscopic views of wood samples showed characteristic features consistent to European Redwood (*Pinus sylvestris*) or more commonly referred to as Scots Pine

Also, an embedded bonding timber was identified at approximately dado height to the north-east north façade masonry. Presumably this timber would have originally spanned the window aperture and run the entire width to the façade providing lateral support during the curing process to the lime mortar. The bonding timber now served no structural purpose other than to provide a fixing ‘ground’ for window and panelling timbers. No formal species identification was undertaken although the bonding timber was presumed to be of *Quercus* genus*,* most probably *Quercus robur* or more commonly referred to as English common oak. Dimension; 110x90mm

3.5.2 Condition

No structural or concerning decay was identified to accessible areas to the panelling or embedded bonding timber structures. Surface and deep moisture contents were too low to support active decay organisms. However, some visible mould spores were seen to the rear face to panel members likely relating to previous failure to the external downpipe creating interstitial condensation issues within the unventilated void. Mould issues were generally assumed to be inactive at the time of investigation. Further to this, it was noted that the north façade elevation had separated from the east internal division masonry wall by up to ~40mm, although this movement was deemed to be of historic occurrence

Structural Engineer to comment on opening/partial separation between the north façade and internal east division wall. No further action required in regard to decay issues providing no further water penetration is allowed to occur. Allow for mould affected surfaces to be cleaned. This may be achieved by first vacuuming the affected area prior to wiping down with a dilute solution of water to bleach at 10:1 mixture before swabbing dry. A consistent regime of background heating and ventilation is advised to the property in general during periods of reduced occupancy. It is recommended that removed areas of panelling remain open to allow for increased ventilation for the duration of 2023

3.6 OPENING P8- SECOND FLOOR REAR SOUTH WC

3.6.1 Construction

Historic/later addition flat roof over the second floor historic floor structures. Flat roof and floor joists ran in east-west orientation and embedded into masonry elevations. Insufficient access at the time of investigation to determine the presence/construction and condition to rafter or wall plates. All visible structures were of softwood, assumed to be of *Pinus* genus, most probably *Pinus sylvestris* or European Redwood. The following constructional elements and their dimensions were recorded;

Flat roof joists ~140x50mm at 440mm centres
Second floor joists ~100x50mm at 340mm centres

3.6.2 Condition

No structural decay detected. Deep moisture contents recorded as dry at <10 per cent despite vulnerability to active failure to the north-east downpipe

Subject to no further moisture penetration to the façade from the historically failed north-east, no immediate action required

3.7 OPENING P9- SECOND FLOOR DRESSING ROOM FLOOR

3.7.1 Construction

Historic floor structure of softwood construction. Floor structural build-up was of 'single floor' construction whereby primary north-south orientated floor beams supported perpendicular east-west floor joists. Floor joists meeting the east internal party wall did not appear to be supported onto a timber wall plate but were instead directly embedded into masonry pockets and apparently partnered against protruding party floor joists embedded to the full depth to the party wall. Floorboards and floor joists were assumed to be of *Pinus* genus, most probably *Pinus sylvestris* or European Redwood. The following constructional elements and their dimensions were recorded;

Primary beam - N/A
Floor joists (softwood) ~210x55mm at 480mm centres
Floorboards (softwood) ~25x240mm

3.7.2 Condition

No decay identified to accessible areas to floor structures. Surface and deep moisture contents too low to support decay organisms

No immediate action required

3.8 OPENING P10- SOUTH PILE ROOF, SOUTH-EAST AREA EAVES

3.8.1 Construction

Historic roof structure of mixed hardwood and softwood construction. South pile, south pitch roof formed of common truss assembly only (i.e., no principal trusses) draining towards south elevation eaves gutters. Also, no collars, purlins or supporting raking struts noted. All oak elements were apparently of re-salvaged stock with much evidence for previous roof batten fixings as well as obsolete roof specific jointing. No formal species identification was undertaken although historic hardwood roof timbers were likely of *Quercus* genus*,* most *probably Quercus robur* or more commonly referred to as English common oak. All remaining historic softwood timbers were assumed to be of *Pinus genus*,

most probably *Pinus sylvestris* or European Redwood. Modern intervention or remedial timbers were assumed to be of *Picea* genus, most likely *Picea abies* or Norway Spruce. The following constructional elements and their dimensions were recorded;

Tie beams (softwood) ~130x230mm
Common rafters (oak) ~130x75mm at 460mm centres
Common rafters (softwood) ~95x75mm at 460mm centres
Hip rafters ~160x160mm
Rafter plates ~120x120mm
Modern partner timbers ~100x50mm

3.8.2 Condition

No decay identified to accessible areas to eaves juncture timbers. Surface and deep moisture contents too low to support decay organisms. No structurally concerning defects identified

No immediate action required

3.9 OPENING P11- NORTH PILE ROOF, NORTH-EAST PARAPET AREA

3.9.1 Construction

Historic roof structure of mixed hardwood and softwood construction. North pile, north pitch roof formed of common truss assembly only (i.e., no principal trusses) draining towards south elevation eaves gutters. Also, no collars, purlins or supporting raking struts noted. All oak elements were apparently of re-salvaged stock with much evidence for previous roof batten fixings as well as obsolete roof specific jointing. No formal species identification was undertaken although historic hardwood roof timbers were likely of *Quercus* genus*,* most probably *Quercus robur* or more commonly referred to as English common oak. All remaining historic softwood timbers were assumed to be of *Pinus* genus, most probably *Pinus sylvestris* or European Redwood. Modern intervention or remedial timbers were assumed to be of *Picea genus*, most likely *Picea abies* or Norway Spruce. The following constructional elements and their dimensions were recorded;

Tie beams (softwood) ~130x230mm
Common rafters (oak) ~130x75mm at 460mm centres
Common rafters (softwood) ~95x75mm at 460mm centres
Hip rafters ~160x160mm
Rafter plates ~120x120mm
Modern partner timbers ~100x50mm
Gutter formers ~variable

3.9.2 Condition

Structural decay identified to multiple roof timbers in contact to the north parapet wall. Surface and deep moisture contents too dry to support active decay organisms. All decay presumed to be of historic origin relating to failure to the internal trench gulley and parapet gutter leadwork. Decayed items included;

-East tie beams north bearing end structurally decayed for ~150mm
-Rafter plate structurally decayed to 2no. areas for a total of 1.25m
-2no. common rafter feet decayed for <100mm

Also subsequent to structural decay to partially embedded rafter plate timbers it was noted that the parapet masonry brickwork had partially collapsed/was unstable to 2no. areas due to structural settlement. See Plans at Attachment B for marked-up locations of structural decay and loose parapet masonry

Structural Engineer to comment upon the condition to the visibly unstable parapet masonry to the north-east area. Provisionally allow for the making good to the affected masonry structures in conjunction to (opening) works to repair identified decayed timbers items. This should include for the cutting back to all decayed items and piecing in new timber of like species/dimensions to a detail approved by H+R and the Structural Engineer. Consideration should be given to supporting the primary end to the decayed tie beam with a suitable steel shoe/flitch plate under the direction of the Structural Engineer. Decayed common rafter ends may be partnered with new timbers at >800mm overlap to sound timber and bolted together with stainless fixings at ~150mm centres

Further to identified decay issues to the prescribed area to P11, it was generally noted throughout the roof structures forming the north and south pile roofs, that apparently insufficient structural support had been provided to the roof structures with the omittance of purlins, collars and struts. Consequently, much deflection and bowing to common truss assemblies was noted throughout, with numerous fractures local to knot locations and general growth/grain defects. Subject to approval by the relevant Conservation Authorities, the Structural Engineer and the Architects, H+R therefore suggest that consideration is given to the introduction of a new internal superstructure feature purlins and queen post struts so as to shore-up the existing historic roof structures. H+R can provide further assistance if instructed

3.10 OPENING P12 AND 14- SECOND FLOOR SOUTH-WEST WC AND CLOSET ROOM FLOOR

3.10.1 Construction

Historic floor structure of softwood construction. Floor structural build-up was of ‘single floor’ construction whereby east-west floor joists spanned between masonry walls and internal stud division walls forming the principal stairs. Floor joists meeting the west flank wall could not be accessed for construction and condition analysis. Floor boards and floor joists were assumed to be of *Pinus genus*, most probably *Pinus sylvestris* or European Redwood. The following constructional elements and their dimensions were recorded;

Historic floor joists (softwood) ~200x70mm at 440mm centres
Floorboards (softwood) ~25x250mm
Hearth trimmers ~70x200mm

3.10.2 Condition

No decay or structural defects were identified to accessible areas to floor structures. Surface and deep moisture contents too low to support decay organisms

No immediate action required

3.11 OPENING P3 AND 15- SECOND FLOOR NORTH-EAST BEDROOM FLOOR

3.11.1 Construction

Historic floor structure of softwood construction. Floor structural build-up was of ‘single floor’ construction whereby primary north-south orientated floor beams supported perpendicular east-west floor joists. Floor joists meeting the east internal party wall did not appear to be supported onto a timber wall plate but were instead directly embedded into masonry pockets and apparently partnered against protruding party floor joists embedded to the full depth to the party wall. Floorboards and floor joists were assumed to be of *Pinus* genus, most probably *Pinus sylvestris* or European Redwood. The following constructional elements and their dimensions were recorded;

Primary beam -N/A
Floor joists (softwood) ~210x55mm at 480mm centres
Floorboards (softwood) ~25x240mm

3.11.2 Condition

No decay or structural defects were identified to accessible areas to floor structures. Surface and deep moisture contents too low to support decay organisms

No immediate action required

4 H+R WORK ON SITE

4.1 H+R inspected vulnerable and representative timbers for construction and condition

5 PROPOSED ACTION BY H+R

5.1 H+R will advise on repair and conservation of timber elements, so as to minimise the risk of decay after refurbishment if instructed

5.2 H+R will advise on remedial detailing, so as to minimise the risk of damp and decay problems after refurbishment if instructed

5.3 H+R will advise on conservation of original fabric with regard to damp, decay and salt damage, as necessary and if instructed

5.4 H+R will review proposed remedial details as these become available if instructed

5.5 H+R will return to site to inspect sample remedial details if instructed

6 INFORMATION REQUIRED BY H+R

6.1 H+R require up-to-date copies of project programmes, as these become available

6.2 H+R require copies of up-to-date lists of project personnel and contact lists as these become available

6.3 H+R require copies of proposed remedial details for comment as these become available

6.4 H+R should be informed as a matter of urgency if further significant water penetration occurs onto site; so that advice can be given on cost-effective remedial measures, to minimise the risk of cost or programme overruns and so as to minimise the risk of damp or decay problems during the latent defect period

7 ADMINISTRATION REQUIREMENTS

7.1 H+R require formal instructions for further investigations and consultancy on this project

7.2 H+R require confirmation of distribution of digital and printed copies of reports and site notes

Attachment A

Fig 1:

P11, roof; showing general view towards the north-east timber roof structures adjacent to the external main rainwater downpipe. Note structural decay detected to 2no. areas to the rafter plate and to historic common rafter feet in this location as indicated by the red lines

Fig 2:

P11, roof, north-east corner; showing closer view to structurally decayed rafter plates to the north-east corner for approximately 500mm. Also note subsequent destabilisation of the parapet masonry above. Structural Engineer to comment

4 Maids of Honour Row
Photographs
August 2023
Not to scale

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Fig 3:

P11, roof; showing general view towards the central area roof structures to the north parapet wall. Note structural decay detected to the principal tie beam north bearing end as well as to the underlying plate and 1 no. common rafter as indicated by red lines

Fig 4:

P11, roof, north parapet; showing closer view to the structurally decayed embedded rafter plate also supporting the tie beam end. Note pieces of decayed timber can easily be removed by hand as indicated on site by author

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Fig 5:

P11, roof, north perimeter parapet gutter; showing area of decayed embedded rafter plate. Also note subsequent destabilisation to the masonry parapet wall head above. Structural Engineer to comment

Fig 6:

Roof, north pile, north pitch roof; showing 1 no. common rafter subject to a structural fracture to its mid-span which had subsequently been remedially propped by a raking strut member. No further action required

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Fig 7:

Roof, north pile, north-west hip; showing significant structural failure/fracture to the hip at its mid-span. Note hip rafter had been subsequently partner repaired to its underside with new member which may not be sufficient to support envisaged structural loadings. Structural Engineer to comment

Fig 8:

Roof, north pile, north pitch; showing representative historic oak common rafter which had presumably been re-used/salvaged to its current location due to the evidence of multiple generations of roofing batten fixings corrosion and weathering to its side face indicating the historic common rafter had been rotated for its re-use to its current position. Also note evidence for purlin 'square' cleft oak pegs also identifiable

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Fig 9:

Roof; showing representative image to a presumed historically reclaimed timber element to the north pile roof east internal party wall. Note historic oak member presumably once formed a principal rafter with a clasped purlin queen strut arrangement with a side mortice to house an historic wind brace

Fig 10:

Roof; showing general view to the south pile roof. Note all roof structures were without a continuous ridge, purlin members, collars or struts. Roof structures solely formed by common rafter arrangements with lapped or tenon joints at their ridge apex. No lateral support is provided to the roof build-up with much subsequent evidence for inwards bowing/deflection to the common rafter assemblies under the existing roof loadings and presumably outward raking at the eaves junctions. Structural Engineer to comment. Provisionally allow for the introduction of new purlin members, collars and raking struts to strengthen existing historic roof structures to support ongoing envisaged loadings

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Fig 11:

Roof, south pile, north pitch; showing representative historic softwood roof member subject to severe structural fracture at its knot location to its mid-span due to inadequate support/no provision for support from purlins, collars or struts. Structural Engineer to comment

Fig 12:

P15, second floor; showing view to the north-east floor structures under investigation via video borescope analysis

Fig 13:

P15, second floor; showing a videoscope image to the most vulnerable floor joist embedded into the north-east corner. Note visible evidence for damp staining due to historic water penetration from failed roof finishes above in the past However, no significant decay issues detected or presumed

Fig 14:

Roof; showing view towards the internal division east party wall to the north pile roof. Note significant fire break formed between the party wall structure due to the shared internal trench gulley

Fig 15:

P11, second floor, north-east lintel; showing superficial decay to the upper window reveal/fascia which was not concealing a lintel due to no structural loading bearing onto this point. Main lintel formed of embedded rafter plate above/to the rear

Fig 16:

P12, second floor; showing general view towards the exposed floor structures adjacent to the north-west hearth location. Historic floor structure existing beneath the overlaid modern softwood timber floor. Accessible and representative timbers were deep drilled and moisture probed. No decay or structural issue detected

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Fig 17:

P12, second floor; showing representative view to a common floor joist jointed to the diagonal half trimmer with a basic mitre joint and fixed with 2 no. large apparently hand forged ferrous fixings. No defects identified

Fig 18:

P12, second floor; showing representative view to the floor void. Note no apparent provision for floor void insulation or for noggins/herringbone struts to provide lateral support to existing historic floor structures. Also note some evidence for possibly fairly significant service notching to the upper face of the historic floor joists

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Fig 19:

Second floor, north-west corner; showing localised opening to the non-historic floorboards to gain access to the historic floor joists beneath

Fig 20:

Second floor, north-west corner; showing representative view to the floor void looking east. Note no apparent provision for pugging material/insulation or noggin/ strut members to provide lateral support to the floor structures. However, no significant movement or bounce to the floor structures identified when traversed

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Fig 21:

Second floor, north-east corner; showing construction detail towards the north-east corner junction where the perimeter floor joist embeds into the external west flank wall. Note that the floor joist was embedded onto a perpendicular horizontal floor plate, which was apparently of oak and had no visible water staining damage or apparent decay issues

Fig 22:

P8, second floor; showing general view towards the partially exposed flat roof and floor structures to the south area. Available embedded bearing ends to the flat roof joists and floor joists were resistance drilled and deep moisture probed. No decay detected. All deep moisture contents below 8% which is too dry to support active decay organisms at the time of investigation

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Fig 23:

P6, first floor, north-east corner; showing a general view towards the partially exposed floor/wall structures and openings to the panel elements to allow for investigation to timber elements

Fig 24:

First floor; showing general view towards the upper lintels over the north perimeter wall window apertures. Note no provision for access at time of investigation to determine the construction and condition to the internal timber lintels

Fig 25:

P6, first floor; showing view to the floor void looking east towards the internal party wall. Note east-west orientated floor joists apparently embedded directly into the wall without provision for a longitudinal wall plate beneath. Also note that the floor joists apparently partner to the party wall floor joist which penetrate the full depth of the party wall masonry and are presumably nailed together

Fig 26:

P6, first floor; showing representative view to an additional floor void between joist centres looking east to the internal division party wall. Note no apparent provision for a perpendicular supporting continuous wall plates beneath the embedded floor joists. Floor joists were apparently embedded directly into the masonry with small timber packing elements to allow for variations in depth of joist tenon

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Fig 27:

P6, first floor; showing view towards the north perimeter wall. Note the visible softwood timber lintel to the ground floor structures beneath over the north-east window aperture. Accessible for deep drilling and moisture probing from the first floor level as indicated by red arrows

Fig 28:

P6, first floor; showing closer view towards the accessible north-east lintel over the ground floor window aperture. Lintel was deep resistance drilled and moisture probed. No decay detected

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Fig 29:

P7, first floor, north-east corner; showing general view of opening into the window reveal showing the timber panelling build -up. Note visible evidence of a continuous embedded bonding timber formed in oak, which would have originally spanned the window aperture during the curing process to the masonry during the original construction phase. It had subsequently been cut short and used as a grounding location for a timber panel support slat

Fig 30:

P7, first floor, north-east corner; showing view towards the identified embedded bonding timber looking east. Note bonding timber apparently continues towards/into the party wall and neighbouring property. Also note partial historic debonding of the internal division masonry wall from the external north façade wall by up to ~40mm. Structural Engineer to comment

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Fig 31:

P7, first floor; showing view of void to the north-east corner between the external north façade masonry wall and the internal panelling. Note evidence of mould spores to the rear face of the historic panelling indicative of moisture penetration issues to the area from the failed external rainwater downpipe in the past and present allowing interstitial condensation to form within the unventilated void. However, no significant structural decay detected to available timber elements and timbers benefitting significantly from the increased ventilation channels to the existing exposed areas

Fig 32:

P7, first floor; showing representative surface moisture content to an historic exposed window reveal to the north-east corner recorded as dry at 12.6%

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Fig 33:

P7, first floor; showing a representative deep moisture content to the embedded oak bonding timber recorded at 8.2% which is too dry to support active decay organisms at the time of investigation

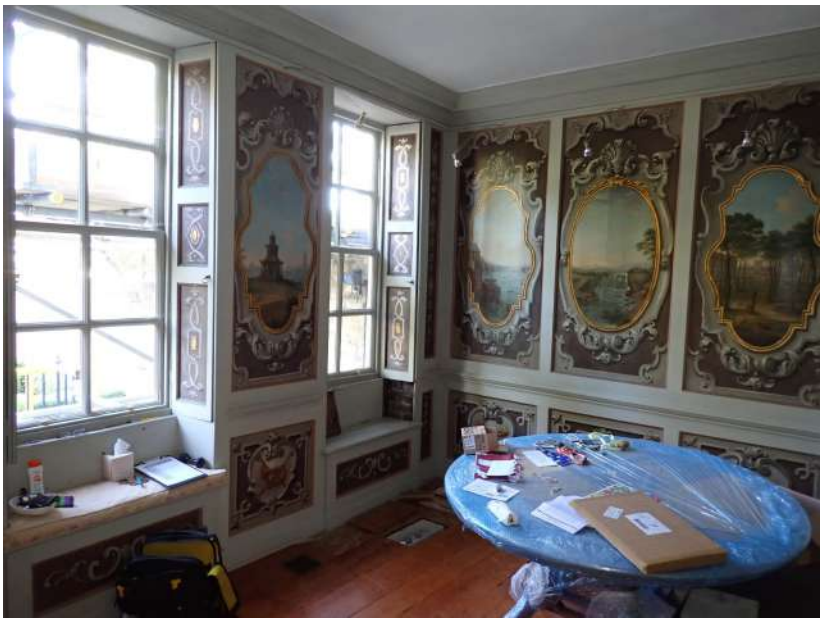

Fig 34:

P5, ground floor; showing general view towards the north-east corner to the entrance hallway. Note localised openings to the historic panelling and floorboards to allow for investigation to potentially vulnerable timber elements subject to intermittent moisture penetration from the failed external lead and cast iron downpipe to this area

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Fig 35:

P5, ground floor; showing a sample area of panel cavity void investigated by video borescope inspection. No significant decay detected, although superficial surface mould growth identified to the back side of all panel elements in this area indicative of intermittent water penetration from the failed external downpipe

Fig 36:

P5, ground floor; showing a representative surface moisture content from a panel member subject to surface mould spores to its rear face. Surface moisture content recorded at 16.2% which although not significant, is considered elevated and therefore vulnerable to potential infestation by wood boring beetle to any remaining sapwood bands

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Fig 37:

P5, ground floor; showing a representative surface moisture content reading to the rear side to a wall panel at 13.5%

Fig 38:

P5, ground floor; showing a representative moisture content to the panelled window reveal to the north-east window recorded as elevated at 16.7%

Fig 39:

P5, ground floor; showing view to the partially exposed void between the north -east window reveal and the north facade masonry wall. Note no visible evidence for an embedded bonding timber in this area as identified at first floor structures above

Fig 40:

P4, ground floor as seen from basement kitchen level; showing general view towards the exposed floor structures to the north-east corner. Note interesting constructional arrangement whereby the north-south orientated floor joists and ceiling joists were not embedded into the vulnerable external north façade elevation but were carried instead onto a secondary beam element which itself bore onto the internal flank east wall and to the primary beam member

Fig 41:

P4, ground floor; showing representative view toward the floor void looking west. Note construction arrangement of floor structures in a ‘double-floor’ arrangement whereby the secondary floor beam supported independent parallel floor and ceiling joist elements

Fig 42:

P4, ground floor; showing additional view to the historic floor void looking west. Note historically interesting construction arrangement whereby the floor joists were of poorer quality than the ceiling joists with significant remaining sapwood bands. Also note ceiling joists apparently tenoned into the secondary beams at both ends suggesting that the ceiling joists were introduced during the original construction phase/assembly whereas floor joists were added after

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Fig 43:

P4, ground floor; showing view to the junction between the north façade perimeter secondary beam bearing onto the north-south running primary beam. The north primary beam bearing end was deep drilled and moisture probed. No decay detected. Deep moisture content at <10%

Fig 44:

P4, ground floor; showing a representative view towards the floor void looking south where the central secondary beam meets the primary north-south running principal beam. No defects identified

Fig 45:

P4, ground floor; showing construction detail of the north perimeter floor joist bearing onto the masonry wall head with scalloped ends to allow for suitable levelling to the floor structures above

Fig 46:

P4, basement; showing view towards the partially exposed oak timber lintels over the vulnerable north-east window aperture. Note inner oak lintel forming the main structural support to the structures above and apparently of reclaimed stock

Fig 47:

P4, basement; showing a deep moisture content reading to the micro bore resistant drill holes to the north-east timber lintel at its south bearing end. Deep moisture content recorded as dry at 8%

Fig 48:

P4, ground floor; showing view towards the north-east corner where the secondary beam embeds into the internal division masonry wall adjacent to the vulnerable and actively failing external downpipe. Secondary beam embedded bearing end could not be resistance drilled and deep moisture probed at the time of the investigation. However, no significant or concerning decay organisms or indications for significant decay issues visually identified

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Fig 49:

P2, basement; showing general view towards the exposed suspended timber floor structures to the west area

Fig 50:

P2, basement; showing view towards the modern softwood floor structures. Note floor plate supported onto an historic masonry dwarf wall and separated by a suitable bituminous damp-proof membrane

Fig 51:

P2, basement; showing representative view towards the floor void looking west. Note central division north-south orientated wall plate supported onto the historic brick plinth wall and provided with a suitable DPM. No decay organisms identified or presumed

Fig 52:

P2, basement; showing representative view towards the floor void looking towards the north-east corner (beneath the dumb waiter location). Note evidence of significant debris build-up to this area which is likely to be reducing ventilation to the floor plate and floor build-up to this location. However, no decay issues identified or presumed at time of investigation

Fig 53:

P10; showing general view towards the exposed south pile roof structure from second floor level to the south-east corner. No decay or structural issues identified

Fig 54:

P9, second floor; showing representative view towards the exposed floor joists in east-west orientation

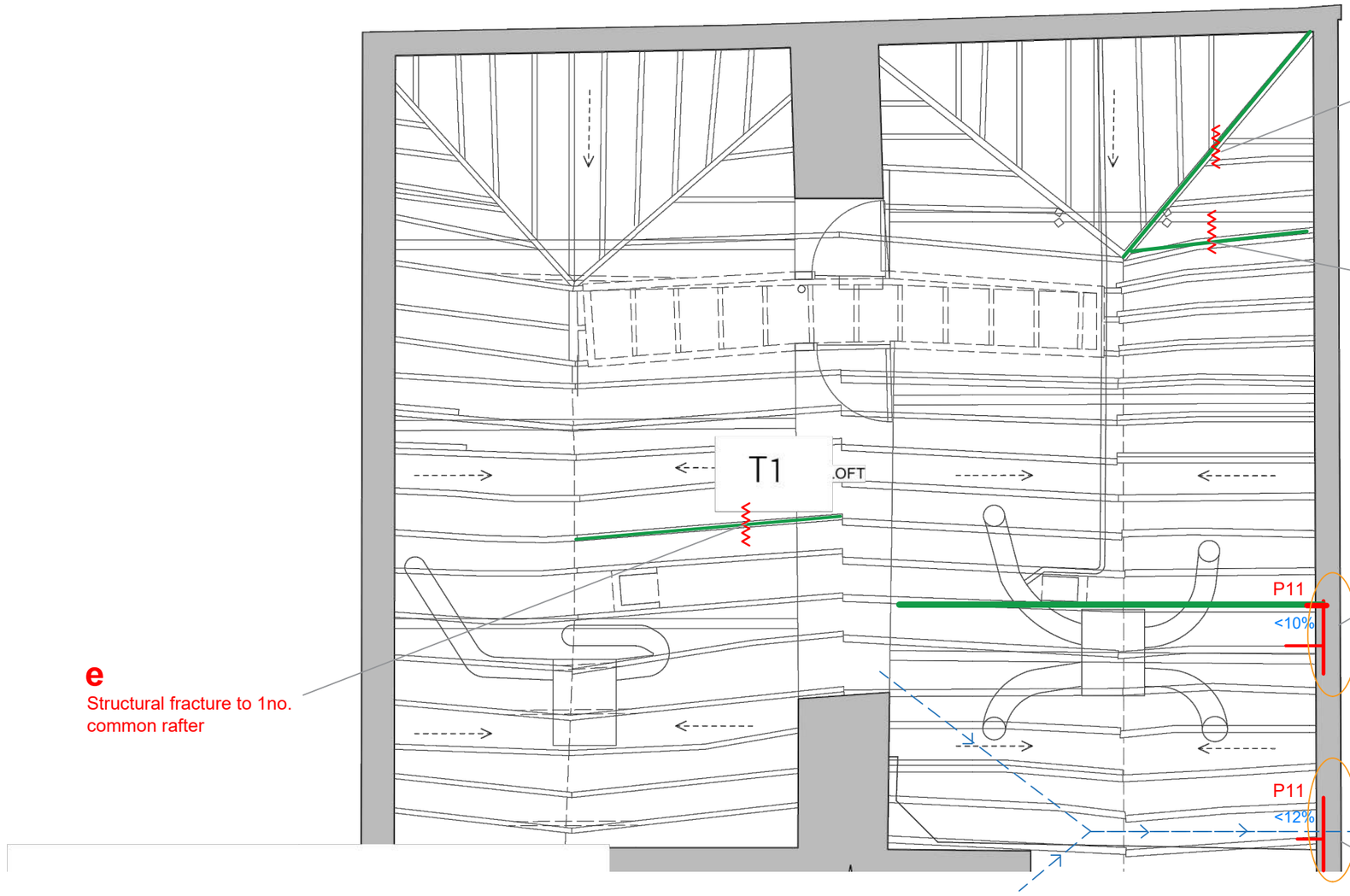
Fig 55:

P9, second floor; showing a detailed view of the floor joists embedded into the internal division party wall to the south-east corner. Note like constructional detail as identified at first floor level, whereby the party wall floor joist apparently penetrate the full extent or depth of the party masonry wall and are partnered to the neighbouring properties floor joists

Fig 56:

P14, second floor; showing general view of the partially exposed floor structures to the internal covered lining. Timbers were investigated for construction and condition. No decay or structural issues identified

Attachment B



e
Structural fracture to hip rafter. Structural Engineer to comment on suitability of existing repair

Structural fracture to 1no. common rafter. Partner repair deemed adequate. No further action required

e
Structural fracture to 1no. common rafter

e
Structural decay to tie beam bearing end for ~150mm
Also to the embedded rafter plate for ~750mm
Also to 1no. common rafter foot for ~100mm

e
Unstable parapet masonry due to settlement from decayed embedded rafter plates

e
Structural decay to the embedded rafter plate for ~500mm
Also to 1no. common rafter foot for ~100mm

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4 Maids of Honour Row - Roof

Phase 2 Timber Condition Investigation
August 2023

Hutton + Rostron Environmental Investigations Ltd
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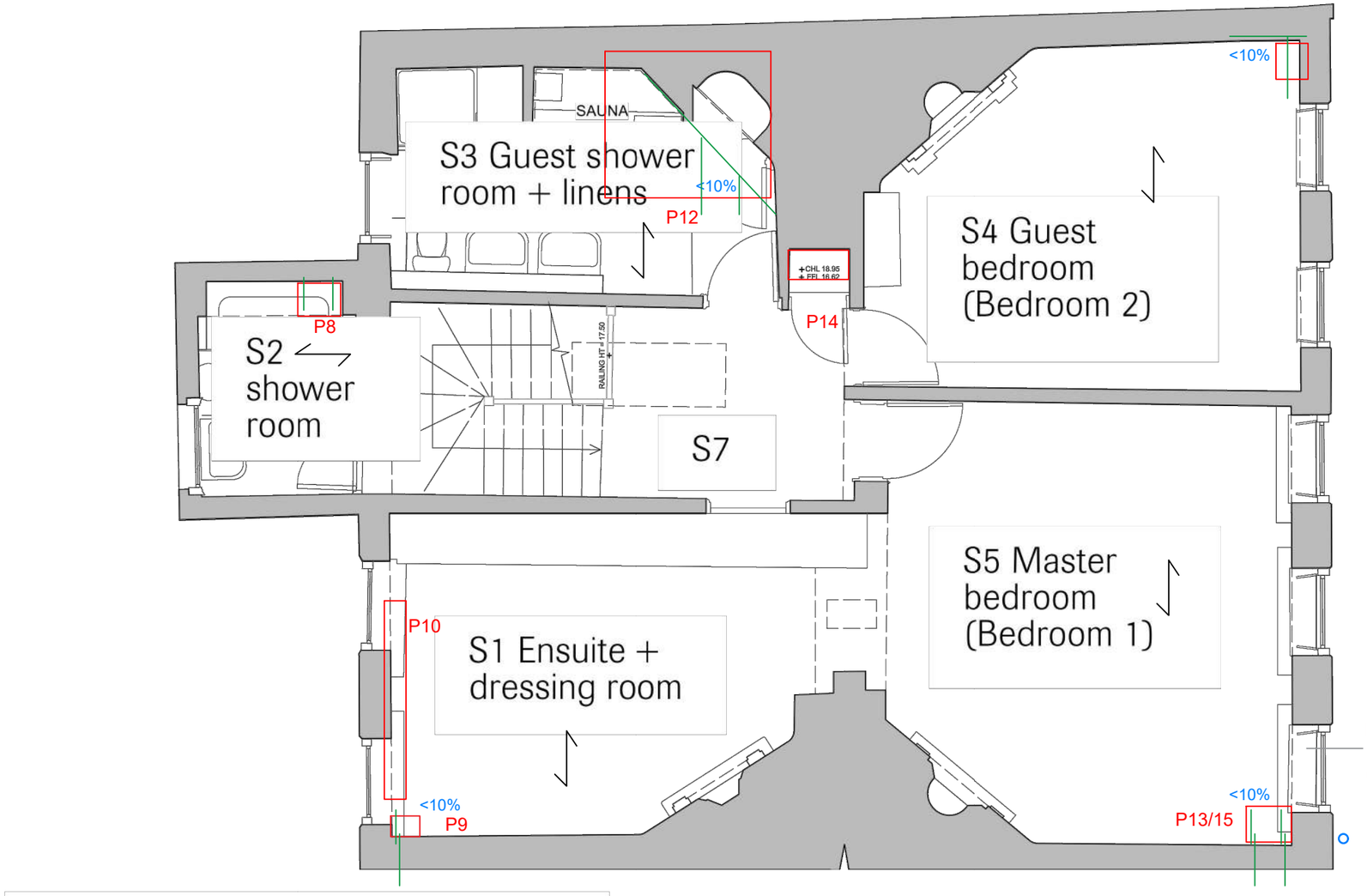
157-65 Site Note 5 -Not to scale-

Key:

- Timber element
- Joist direction
- Structurally decayed timber element
- **e** Structural engineer to comment
- <10% Level of moisture content
- P2 Area/hatch investigated/used during investigation

Floor joists embed into party wall onto an embedded oak plate. No visible decay



No access to vulnerable first floor lintel for condition analysis

Floor joists embed into party wall without provision for a wall plate. Also note party floor joists penetrate full depth of division wall. No visible decay

Floor joists embed into party wall without provision for a wall plate. Also note party floor joists penetrate full depth of division wall. No visible decay

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4 Maids of Honour Row - Second floor

Phase 2 Timber Condition Investigation

August 2023

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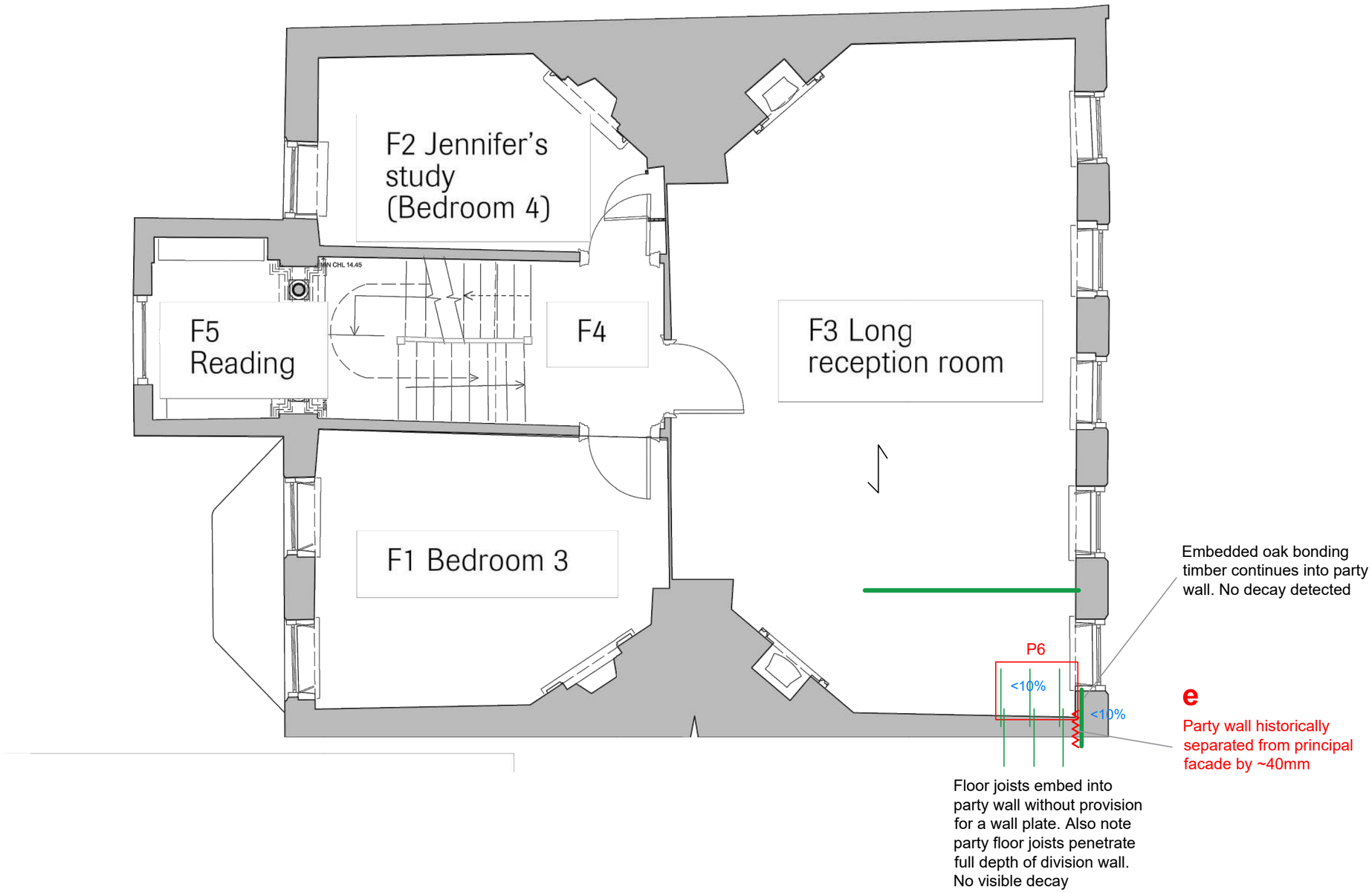
157-65 Site Note 5 -Not to scale-

Key:

- Timber element
- Joist direction
- Structurally decayed timber element
- e Structural engineer to comment
- <10% Level of moisture content
- P2 Area/hatch investigated/used during investigation



4 Maids of Honour Row - First Floor Plan

Phase 2 Timber Condition Investigation

August 2023

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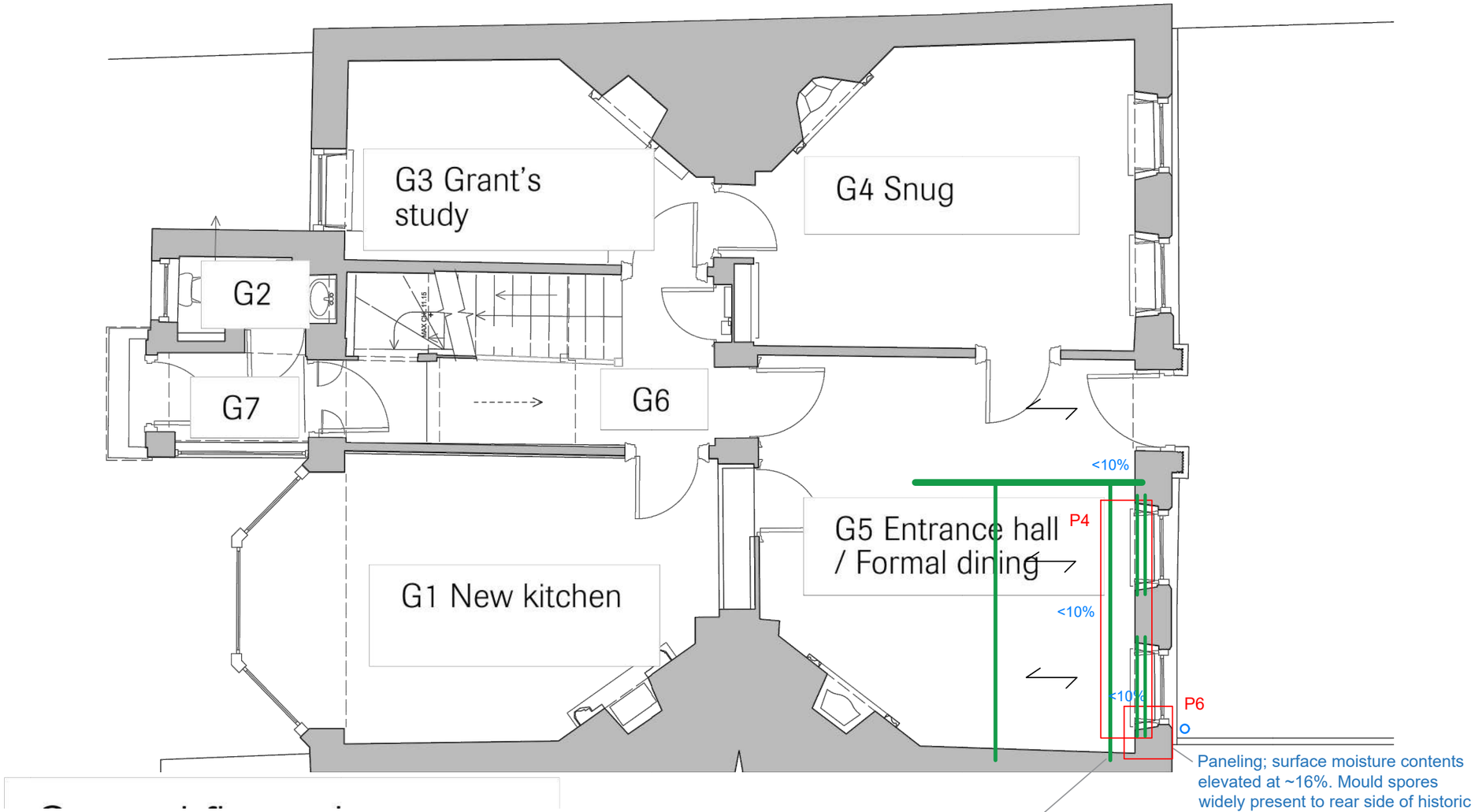
157-65 Site Note 5 -Not to scale-

Key:

- Timber element
- Joist direction
- Structurally decayed timber element
- e — Structural engineer to comment
- <10% — Level of moisture content
- P2 — Area/hatch investigated/used during investigation



4 Maids of Honour Row - Ground Floor Plan

Phase 2 Timber Condition Investigation

August 2023

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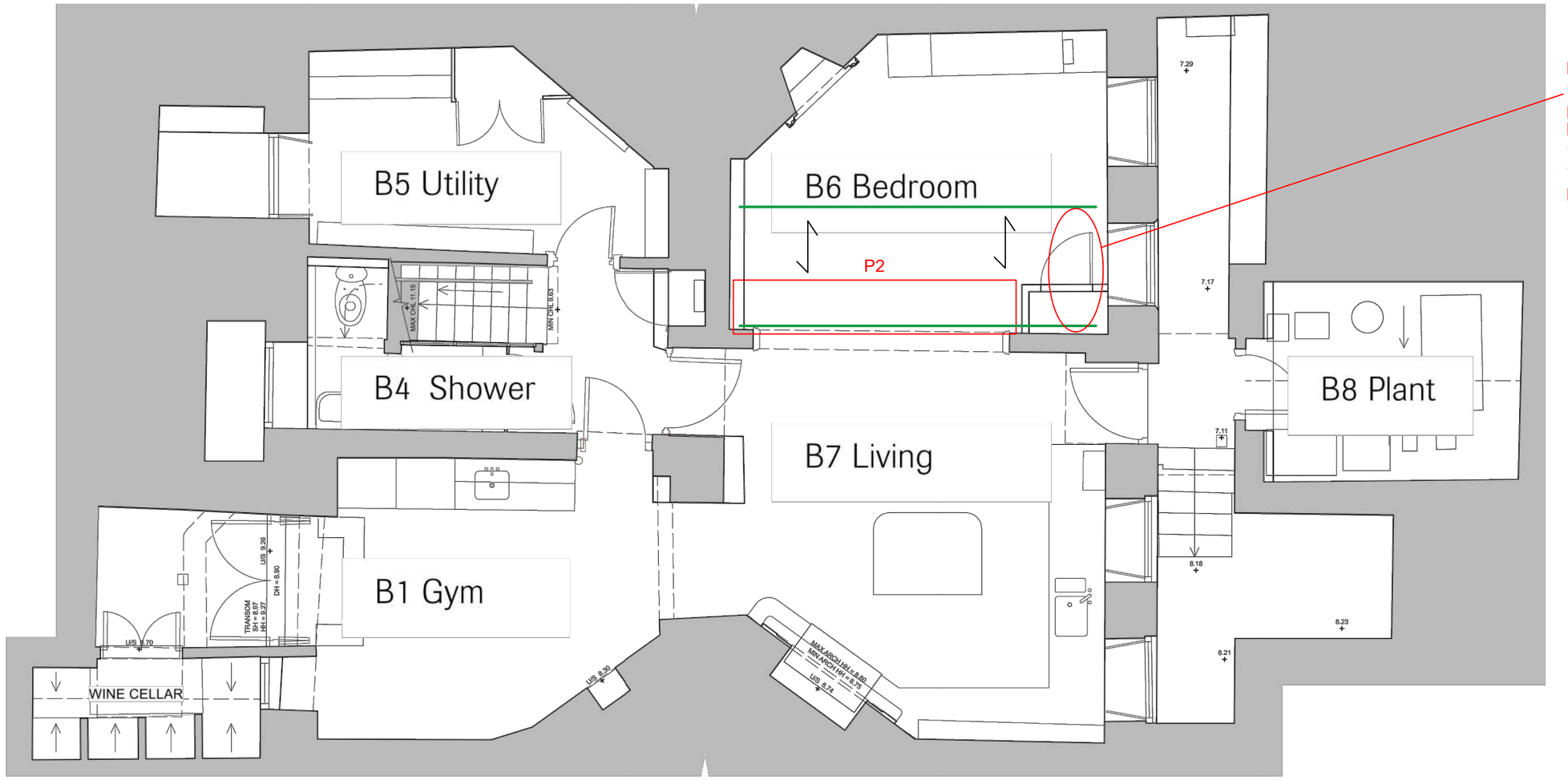
157-65 Site Note 5 -Not to scale-

Key:

- Timber element
- Joist direction
- Structurally decayed timber element
- e Structural engineer to comment
- <10% Level of moisture content
- P2 Area/hatch investigated/used during investigation



4 Maids of Honour Row - Basement Plan

Phase 2 Timber Condition Investigation

August 2023

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157-65 Site Note 5 -Not to scale-

Key:

- Timber element
- Joist direction
- Structurally decayed timber element
- e — Structural engineer to comment
- <10% — Level of moisture content
- P2 — Area/hatch investigated/used during investigation