

Project Number: 306

37 North Road, N6 4BE

STRUCTURAL SURVEY REPORT

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Site Visit: 25.08.24

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Revision History

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1 INTRODUCTION

Bailiss & Co. have been appointed to advise on the structural condition and possible alterations of 37 North Road, N6 4BE by Mr Douglas Paskin.

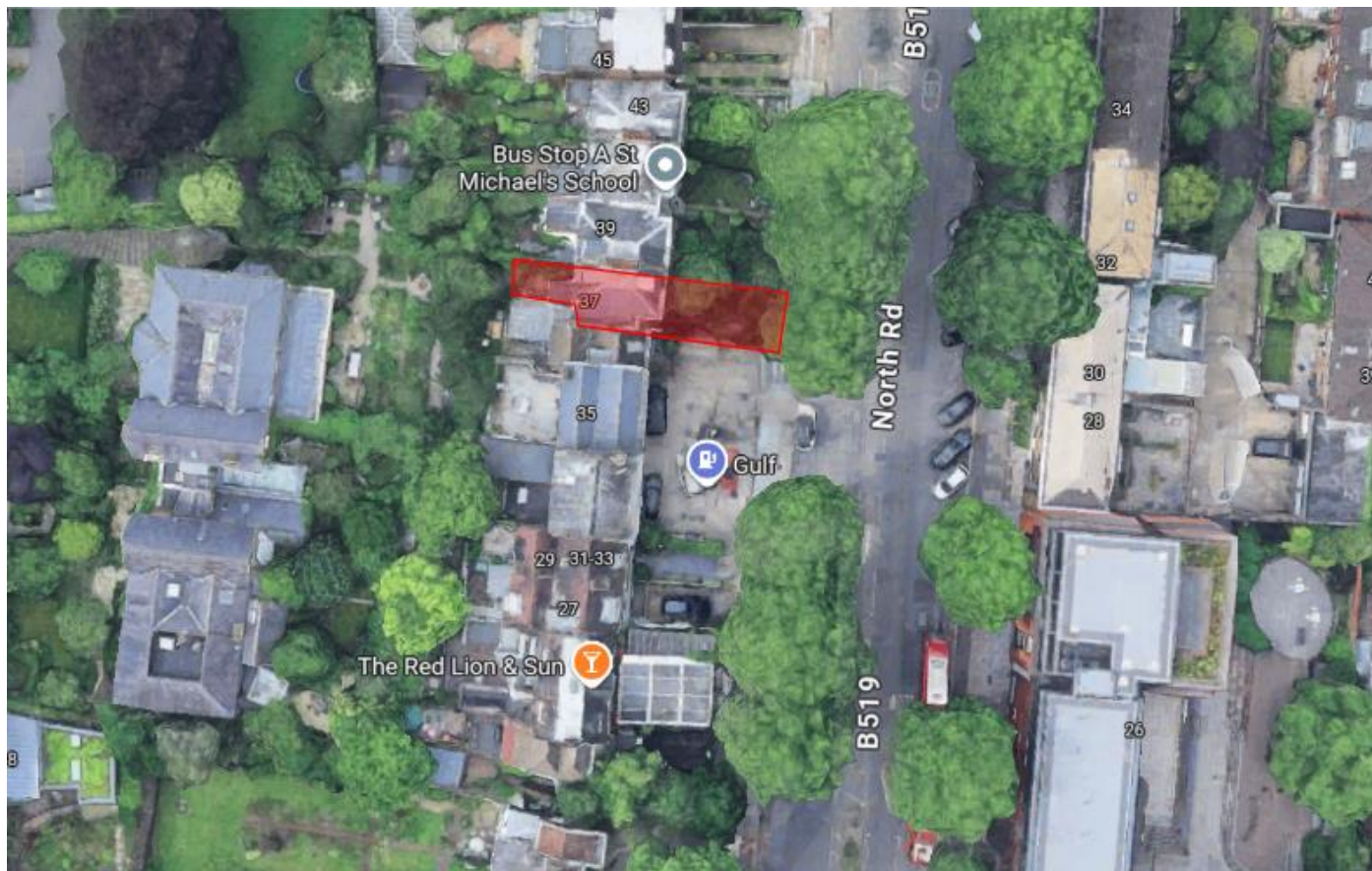


Figure 1 – Aerial view of the house showing the location in red

The property is set back from the road with a large garden to the front, just north of the Gulf petrol station and Red Lion & Sun Pub.

The property is Grade II listed. The listing reading:

1. 4415 NORTH ROAD N6 (West Side) Highgate ----- Nos 37 to 43 (odd) to 43'(odd) TQ 2887 40/205

II GV

2. Earlier C19, 2 pairs, linked in centre by recessed porch wings. Each 2-storey and basement. 1 large window per storey and 1 window in porch wing. Bright red brick with cement anthemion capped pilaster strips resting on cemented basement and under cement entablature and cornice. Porch wings also cemented. Slate hipped roof to each pair. Not attractive but have distinct character, Nos 37 and 43 have modern dormers.

Nos 27 to 43 (odd) form a group.

Listing NGR: TQ2829587648

The property is in a poor state of repair and is subject to a council enforcement notice.

Bailiss & Co. attended site in the morning of Tuesday the 25th September 2024 for a visual survey of the property.

The conditions were warm and bright.

The property was subsequently visited on the 18th December 2024 during the Historic Fabric Survey by Hutton & Rostron, after the publication of their timber rot and masonry surveys and the erection of an external scaffold.

The focus of the visit was to consider the received reports and to consider the condition of the external pilaster, now that access by scaffold to the external façade was possible.

Notes and pictures have been included in line and noted for the 18.12.24 visit in [blue](#).

The conditions were overcast and temperate.

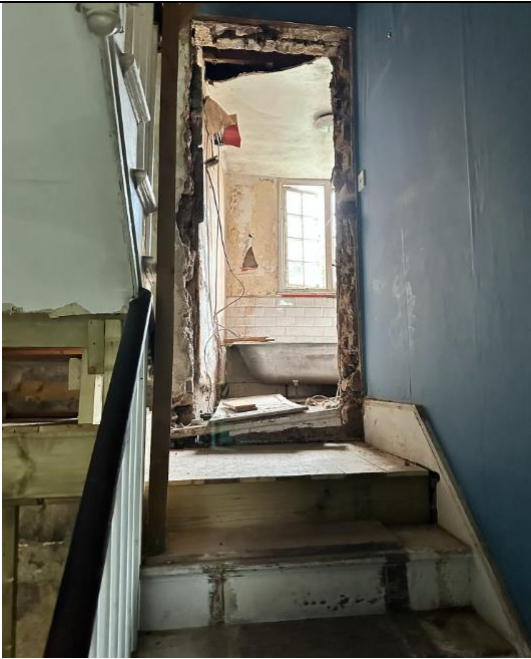
2 SITE OBSERVATIONS

1.0	Overall view from the front. The building is set back from the road with a large tree adjacent to the pavement. Vegetation has been recently cleared from the façade exposing moisture / damp staining to the brick masonry.	
1.1	View of the front balcony. The balcony would have been originally cantilevered from the front façade. Metal and timber posts have been added for additional support. The front corner of the balcony has spalled, assumedly from rot and expansion of the baluster.	

1.2	View to the front corner anthemion and corbelled ridgeline. The anthemion is extensively damaged by vegetation with elements failed and missing and others about to fail.	
2.0	View of the rear façade. Vegetation has been recently removed. Top floor window is missing and covered with polythene. Adjacent wall to neighbour is finished with exposed expamet edging.	
2.1	View in to rear lightwell. Lightwell is fill of leaf litter. Crack to adjacent closet wing.	

3.0	Lower ground – View to front room. Concrete floors, assumedly a replacement of the original.	
3.0.1	Lower ground – View to front room lintel. Lintel has been investigated and marked as rotten for repair. (18.12.24 visit)	
3.1	Lower ground – View to rear room. Concrete floors, assumedly a replacement of the original.	
4.0	Ground floor – view to front room. Front façade at high level adjacent to window shows signs of water ingress and deterioration.	

4.1	Ground floor – view to front room. (shutters open). Front façade at high level adjacent to window shows signs of water ingress and deterioration.	
4.1.1	Ground floor – view to front room corner of investigation and live rot with adjacent lintel marked for removal. (18.12.24 visit)	
4.2	Ground floor – view to rear room. Ceiling shows signs of water ingress and deterioration from above.	

4.3	View from hall to stairs. The stairs have been temporarily repaired and propped to allow access to the 1st floor.	
4.3.1	View in ground hall to rear. Timber baton within internal wall marked as investigated and rotten. (18.12.24 visit)	

4.3.2	View in ground hall to rear door. Notable rot and investigation to wall, wall plate to be removed. (18.12.24 visit)	
5.0	Rear closet wing. Room is inaccessible due to extensive rot to floor. Door frame and door has failed, exposing masonry behind architrave. Bonding of masonry appears to be inadequate.	

5.0.1	Rear closet wing. Room cleared and fully rotten. (18.12.24 visit)	
5.1	1st Hall – view to front. All walls show signs of deterioration and water ingress. Ceiling above has failed. Ceiling / roof joists show signs of extensive rot as well as previous repairs. Front window lintel is failed (rotten) and propped.	

5.1.1	1st Hall. Detail of gutter support and water staining (18.12.24 visit)	
5.2	1st hall – view to 2nd and rear room. Novel and restricted stair access to 2nd.	
5.3	1st floor front room, view to front. Extensive rot and deterioration to front wall, hall wall and floor. Floor boards have locally failed.	

5.3.1	1st floor front room, view to front. View of rot within wall (18.12.24 visit)		
	1st floor front room, view to front corner with internal wall. View of rot within wall (18.12.24 visit)		

6.0	2nd floor loft room – view to front. Signs of extensive damp and water ingress all round as well as failure of roof above.		
6.1	2nd floor loft room – view to rear. Signs of extensive damp and water ingress all round.		
6.2	View in to loft roof. Visible active rot present.		

6.3	View into eaves water tank. Some indication of water ingress in area.	
6.3.1	View to front corner, finishes stripped. Visible water ingress through roof. (18.12.24 visit)	
6.3.2	View to front window, finishes stripped. (18.12.24 visit)	

	View to rear window, finishes stripped. (18.12.24 visit)	
6.4	View from front window to front gutter. Rot to window frame. Slates slipped / missing. Wide gutter fairly full of leaf litter.	

6.4.1

View to side gutter.
Green staining to slates visible
(18.12.24 visit)



6.4.2

View to Party Wall and interface of
tiles to masonry.
Staining to masonry evident.
(18.12.24 visit)



6.4.3

View to Party Wall and interface of
tiles to masonry.

(18.12.24 visit)



6.4.4

View to front dormer.
Extensive rot to frame.

(18.12.24 visit)



6.4.5	View of front cornice. Extensive damage and spalling from vegetation. (18.12.24 visit)	
6.4.6	View of front anthemion & pilaster. Lower section. Extensive damage and spalling from vegetation. Propped lintel to rear. (18.12.24 visit)	

6.4.7	View of front pilaster. Lower section. Extensive damage and spalling from vegetation. (18.12.24 visit)	
6.4.8	Detail of propped lintel to front. Extensive movement and damage noted. (18.12.24 visit)	

3 DISCUSSION

The building is a small Regency villa constructed from traditional masonry external wall, timber / masonry internal wall, timber floor, rafters and slate roof.

The overall condition of the building is extremely poor, as is reflected in the enforcement notice and photographs.

Externally, vegetation and water have taken their toll, bursting the pilaster and cornice to the front façade and probably contributing to the general damp and water ingress and subsequent dry rot.

Internally water ingress and rot are widespread. Large areas of the property have failed boards and structure, to floors, walls and roofs.

In the few areas where it was safe to access or view between joists or rafters, live rot was evident.

The more recent opening-up work and investigation has confirmed that water from roof level has penetrated throughout the building over a significant period of time (decades?) causing significant damage to the timber structure of the building, requiring significant rebuilding and repair.

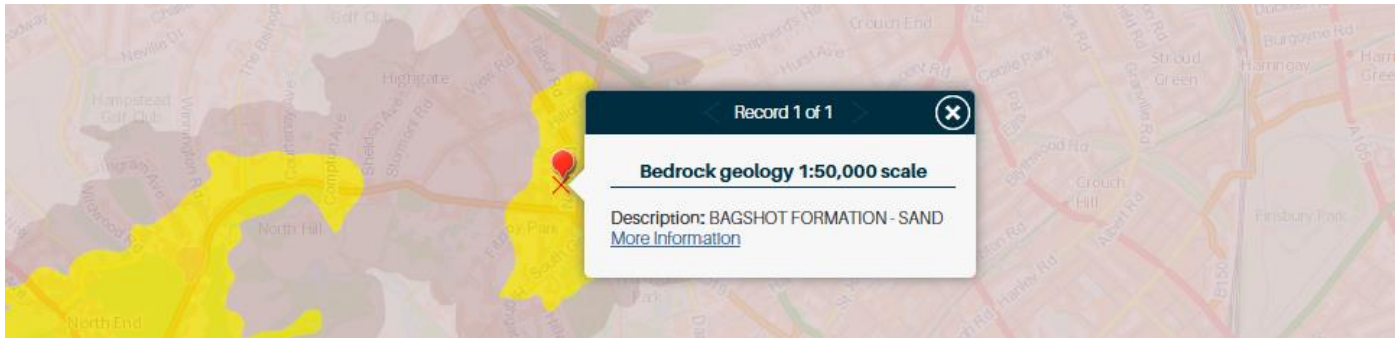
Of particular note, from top to bottom:

- The main roof is rotten and water ingress and dry rot notable.
- The roof to the side wing is failed, rotten and water ingress and dry rot notable.
- The floor to the first floor has in part failed with rotten boards notable.
- Walls toward the front of the building show extensive signs of water ingress and deterioration.
- The rear closet wing is so rotten as to be dangerous to access and should be put out of bounds. The floor and boards are failed. An assessment of the roof joists was not attempted.
- The stair had partially failed due to rot and has been temporarily propped for access.
- The ground floor rooms show signs of water ingress and dry rot.
- The façade has been extensively damaged by vegetation and water ingress. Decorative features have failed. At least 1 lintel to the front façade has failed.

We should also note that, although the timberwork throughout the building was particularly poor, that the masonry structure was not. There were relatively few cracks noted to the masonry structure, the main “frame” of the building appearing relatively sound and that the overall stability of the structure appears sound.

From the British Geological Survey record that the building should be founded on Bagshot Sand (coarse grained sand, locally clayey). As such it should provide a firm, free draining foundation with less chance of impact due to clay heave or shrinkage from nearby vegetation.

The founding of the building lower in the ground on deeper strata should also have bypassed higher made ground or loamy soils. The deeper foundation and lower ground floor are often susceptible to damp.



Since our first visit, Hutton + Rostron have been appointed to undertake several surveys, notably:

DRY ROT AND TIMBER CONDITION INVESTIGATION - JOB NO. 162-58

This thorough investigation and report work methodically through the building identifying the timbers that have been affected by rot.

The report identifies numerous instances of rot and fruiting bodies within the building; rot being found to be extensive and active.

The following are typical extracts from the report that show the expected water source from roof level and the cone of distribution down through the building, as well as the marked up timbers with rot and plans identifying the areas of rot for removal and repair:



Fig 1:

East elevation; showing a general view to the principal front façade. Note general spread or dry rot 'zone' identified as a cone emanating from roof level and widening substantially down towards ground level

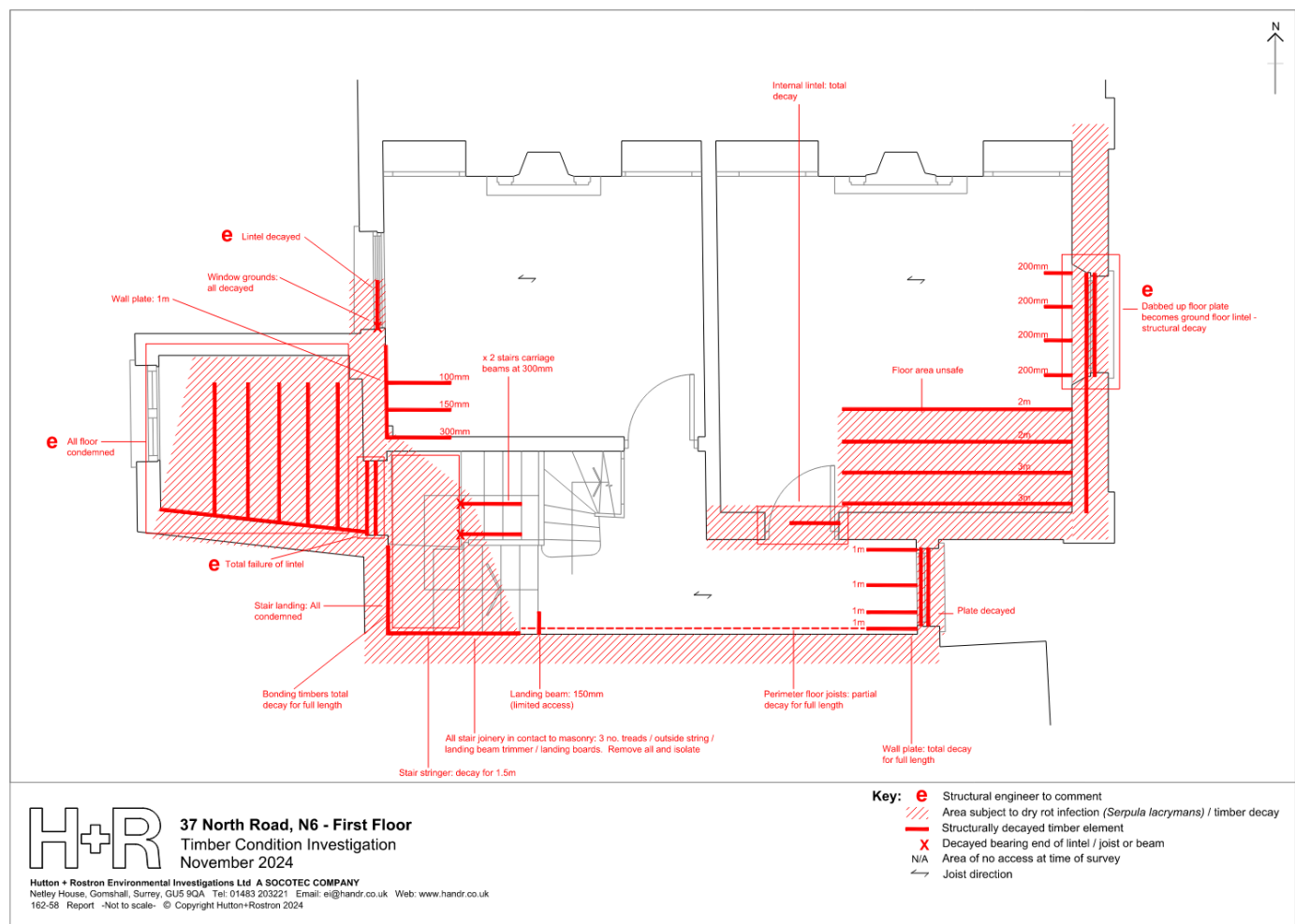


Fig 3:

Roof structures, east pitch; showing structural decay to the rafter plate for almost its entire length at ~4m as well as 1 no. common rafter for ~250mm to its bearing end. All structurally decayed items identified on-site via water soluble red spray paint



Fig 35:
Ground floor, east room; showing further evidence for active dry rot fungus to embedded east perimeter floor joists



The report makes numerous recommendations about drying and cleaning of the building as well as the following statement on the repair and replacement of the structural material:

RPT.2	Repair and isolation of timbers <i>All decayed, partially decayed and at-risk timbers should be repaired, partnered or replaced as necessary as directed by the Structural Engineer and to a detail approved by H+R ensuring timber elements are re-supported and isolated from damp or potentially damp masonry via hangers and/or a through ventilated air-gaps. In the view of H+R, the existing timber structures (including roofs, lintels and floor elements) designated to be in contact to damp zones/areas vulnerable to dry rot infected masonry are not suitable for retention in their existing condition/detailing</i> <i>All embedded timbers to recently damp affected walls remain highly vulnerable to further/ongoing decay, even during the latent drying down period. In particular, it is highly probable that existing zones of decay will continue to expand, coning outwards down the building with further loss to historic fabric during the winter months of 2024-5. Further to this, any historic and unverified areas of inactive dry rot are therefore also liable to becoming reactivated from any future water penetration issues both from failed external envelope to the property</i> <i>Additionally, the extent of concealed decay to embedded timbers remains unverified to localised areas (see Plans to report 162-57) and therefore it remains highly probable that some further structurally significant decay exists</i> <i>In the opinion of H+R therefore, consideration should be given to comprehensive repair/re-detailing/separation to all roof, floor and lintel timbers in contact to the east, west and south facades as well as the west flat roof, first and ground WC floor structures</i>	All works to be carried out by a trained carpenter competent in conservation practices All identified decayed timbers to be cut to the prescribed length of decay and inspected for concealed decay issues to the heart and underside. Further decay issues should be cut back in additional 100-150mm lengths until sound timber is reached. The following methodologies should then be applied to specific structural components; • Rafter plates- After cutting back decayed sections, new lengths of rafter plate of like species and section size to be scarfed into location with a basic ~200mm half-lap joint to the remaining plates sound length and fixed with non-corrosive fixings. New and existing rafter plate lengths to be separated from the wall head via a continuous damp proof membrane with plastic spacers to form a continuous ventilated air gap. Consideration may be given to the use of oak for new and replaced rafter plate sections for its increased rot resistant characteristics/invulnerability to infection by dry rot • Common rafters- After cutting back decayed sections to bearing ends, new partners of like species and section size to be introduced along side historic member and bear between positive points of bearing. I.e. Between the purlin and the rafter plate. Partner and historic member to be bolted together at ~300mm intervals with stainless M10 bolts • Ceiling joists – After cutting back decayed sections to bearing ends, new partners of like species and section size to be introduced alongside historic member and bear between positive points of bearing. I.e. Between the stud/partition walls and the perimeter wall plates. Partner and historic member to be bolted together at ~300mm intervals with stainless M10 bolts. Extensively decayed ceiling joists or joists with decay mid-span to be replaced entirely in like-for-like fashion. Ceiling joist ends to be separated from potentially damp and dry rot infected masonry via cutting back and isolating/supporting via stainless steel hangers • Floor joists – After cutting back decayed sections to bearing ends, new partners of like species and section size to be introduced alongside historic member and bear between positive points of bearing. I.e. Between the stud/partition walls and the perimeter wall plates. Partner and historic member to be bolted together at ~300mm intervals with stainless M10 bolts. Extensively decayed floor joists with decay mid-span to be replaced entirely in like-for-like fashion. Floor joist ends to be separated from potentially damp and dry rot infected masonry via cutting back and isolating/supporting on to a continuous right angled steel bracket ledger with a ventilated air gap between the end grain of the joist to the steel angled bracket at 10-20mm. SE to specify detailing to right angled steel ledger • Wall plates – All decayed and vulnerable wall plates to be cut out in 'hit-and-miss' fashion in say ~400mm intervals, and the cavity infilled with brickwork and a suitable hydraulic lime mortar to match the remaining facades internal face • Lintels- All decayed and vulnerable timber lintels to be replaced with new solid variants under the direction of the SE
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FAÇADE MASONRY CONDITION INVESTIGATION – JOB NO. 162-58

A second report was commissioned on the façade masonry condition and recommend on repair strategy.

The report speculates on the former restoration of the building façade, thought to have only been once in 2013 in the buildings almost 200 year history.

The report identifies issues and presents them on elevation for ease of reference. The following are typical extracts from the report:

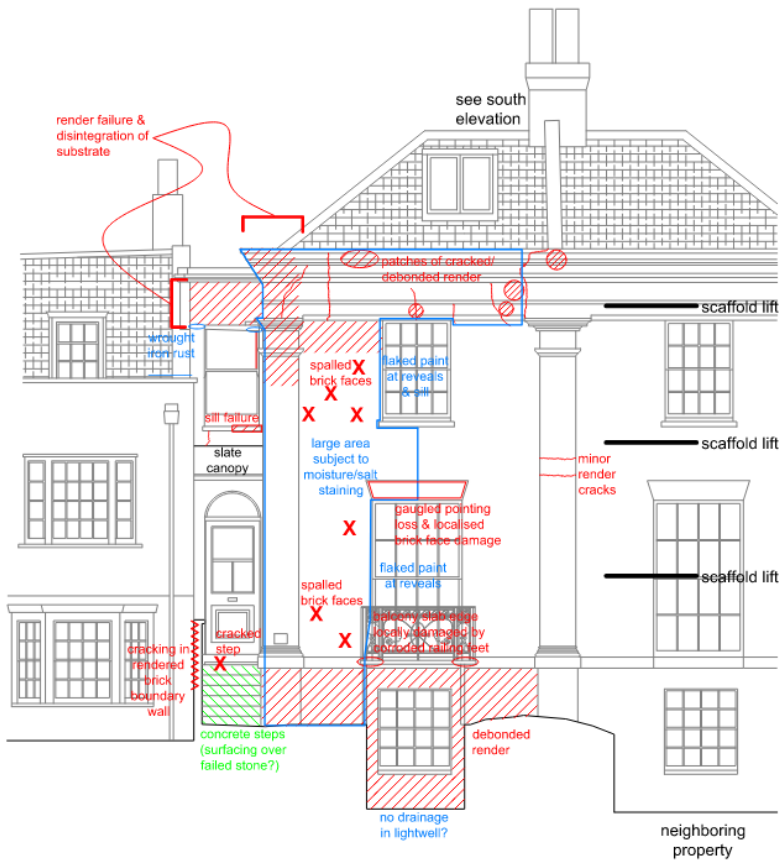


Fig 7:
Front (east) elevation, showing modern Portland cement re-surfacing of original 'Roman cement' render feature

The paint finish was a modern acrylic type



Fig 24:
Front (east) elevation, showing detail of balcony stone damage at corroded railing feet



The report makes numerous recommendations about the facade as well as the following statement on the repair and replacement of the structural material:

RPT.2 FRONT ELEVATION (EAST)			
RPT.2.1	East elevation Wallhead and cornice	As shown on drawings, the south end of the wallhead had suffered a history of render failure (exacerbated by modern cement repairs and acrylic paint). The severity of failure has resulted in disintegration of the substrate; this part of the wallhead was 'live' at time of survey. Note - render sample 2 was taken from this location The north end of the cornice was generally intact with only localised cracks and small patches of debonded render In general, the upper surface of the wallhead has previously been over-coated with cement and flashband which did not appear to be an ideal substrate for the lead capping and gutter lining	<i>These sections of wall should be carefully dismantled, being sure to take photographic records during this process. It is important that the process of dismantlement is closely supervised and not allowed to progress excessively (although none of the historic mortars may be entirely 'solid', the dismantlement must stop after reaching a point where the wall is reasonably intact). Reconstruction should use the original materials where possible but the expectation should be that matching new replica materials will be needed. New brickwork to be laid in NHL5 lime mortar, new render to be a 'Prompt' product as mentioned above</i> <i>All paint to be removed using chemical paint softener and pressurised steam lance. Cracks to be filled with 'Prompt' mortar. Small debonded areas do not require remediation. Redecoration to be made using Keim Mineral Paint</i> <i>Allow to record and remove the leadwork forming gutter lining and wallhead capping. Underlying flashband and cement patches should be removed and made good using 'Prompt' mortar. Conservation leadworker to be consulted on their preferred substrate build-up for laying lead onto masonry; a timber substrate and/or underlay membrane is normally called for</i>
RPT.2.2	East elevation First floor	As shown on drawings, the upper part of the south pilaster has debonded or been lost Adjacent to this, there was a large failed previous repair (dressed-back damaged brick faces clad with a red-coloured render to imitate brickwork). Elsewhere at first floor, there were isolated areas of spalled brick faces All of the first floor render above the entrance door canopy was in a state of failure, including a window sill composed of render The south corner of the elevation was badly stained by moisture/salt from many decades of parapet gutter leakage. Note that staining is liable to persist or worsen as drying-down eventually occurs (during and after roof repairs) due to the way in which moisture dries towards the surface and draws-out salts with it There was also some soiling by aerial roots/suckers of ivy	<i>Loose material to be removed before making good by building-up coats of 'Prompt' mortar. Replication of the pilaster capital will likely need to be done off-site using a reverse-moulding taken from the remaining capital at the party wall (check that it is the same as that seen at the neighbouring property at the other end of the terrace), again this should be done using a 'Prompt' mortar. All of the pilaster and other painted render features should be stripped and re-decorated as described above</i> <i>Failed previous repairs to be removed. Bricks with spalled/damaged faces to be cut-out and replaced in a brick of matching type and imperial size. Pointing for these areas should replicate the surrounding (modern) cement profile because it would be excessively damaging to attempt replacing cement pointing throughout. Products such as 'dyebriq' can be used to tone-in brick and mortar to match</i> <i>This area of render should be replaced in a 'Prompt' mortar. The brick substrate (including sill and lintel) may be in need of repair/replacement</i> <i>Specialist cleaning contractor to be engaged to carry out cleaning trials. This may entail 'poultice' cleaning repeatedly to draw-out salts. The wall will require many months of drying and may be subject to recurring salt emergence</i> <i>Ivy suckers can be removed by careful use of flame gun</i>
REFERENCE	ITEM	OBSERVATIONS	RECOMMENDATIONS
RPT.2.3	East elevation Ground floor and basement lightwell	All render below the string course was debonded from the substrate and in poor general condition. Original packing-out using clay tiles was evident There were isolated areas of spalled brick faces The entrance steps have been replaced or overcoated in cement/concrete (unknown if degraded stone structure remains below). The top step was cracked at a point of weakness created by the coal delivery chute The south corner of the elevation was badly stained by moisture/salt from many decades of parapet gutter leakage. Note that staining is liable to persist or worsen as drying-down eventually occurs (during and after roof repairs) due to the way in which moisture dries towards the surface and draws-out salts with it On the south-facing flank elevation, render was subject to general crazing and paint failure There was also some soiling by aerial roots/suckers of ivy The enamelled metal street number was degraded by corrosion	<i>This area of render should be replaced in a 'Prompt' mortar</i> <i>These bricks to be replaced, as described above</i> <i>The steps are likely to remain serviceable in their current state. Only if desired, consideration and further exploration could be made as to potentially restoring the original stone steps</i> <i>Poultice cleaning is suggested, as described above</i> <i>All paintwork to be removed, cracks filled with 'Prompt' mortar and allowed to cure prior to re-decoration using 'Keim Mineral Paint', as described above. Within the range of products available from Keim, there are primer products which can provide a more even surface finish</i> <i>Ivy suckers can be removed by careful use of flame gun</i> <i>The sign could be restored by a specialist or replaced</i>
RPT.2.4	East elevation Boundary walls etc.	The historic boundary wall alongside the entrance steps was rendered brickwork. This was badly cracked and subject to general debonding of the render Further down the south boundary to the front garden was a modern brick wall which appeared intact The pavement boundary may have originally been iron railings fixed into a stone plinth but this appeared to have been lost many years ago The north boundary of the front garden was not reviewed, it was potentially missing/absent	<i>This section of wall is likely to require replacement of the render and structural repair of cracks by helibar</i> - <i>Consider restoring a historically appropriate boundary</i> -
RPT.3 REAR ELEVATION (WEST)			
RPT.3.1	General	Vertical cracking at construction joint between modern closet wing extension and original rear elevation, crack opened-up by ~20mm Upper south corner has been re-rendered in modern Portland cement (appears to be associated with flying freehold area?) General failure of original render which appears to have always been a low quality (thin) coat of render and vulnerable to the effects of prevailing weather. Modern application of acrylic paint was likely deleterious to render. Render subject to various areas of collapse and widespread debonding Various redundant fixings and service runs/penetrations The rear garden boundaries were not reviewed, they appeared to be simple modern timber fencing	<i>Structural Engineer to review this and other areas of cracking generally. It may be necessary to provide corner-ties using helibar or similar</i> <i>As a minimum, it is suggested that this area is decorated using Keim mineral paint for weathering protection</i> <i>Total replacement of this render is recommended using an NHL5 mortar</i> <i>To be made good using matching materials, following removal of all redundant items</i> -

4 RECOMMENDATIONS

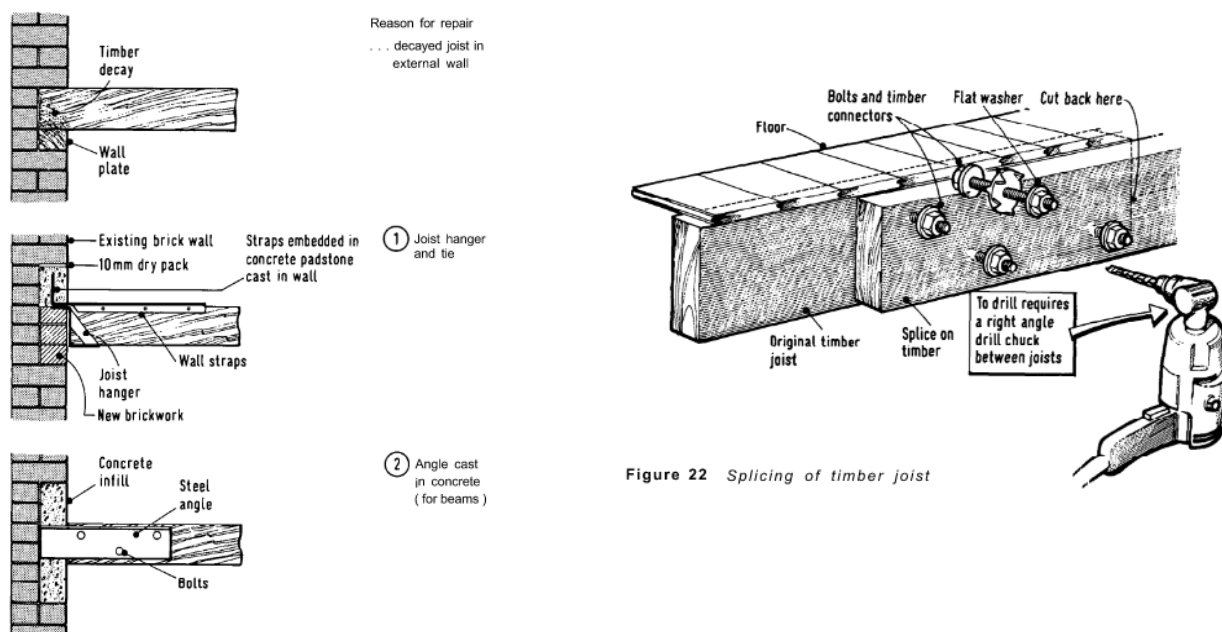
From the reports and site surveys, a high-level list of recommendations for the structure of the building can be summarised as follows:

1-The replacement of rotten timber floor and roof joists / rafters.

Cutting back the existing rotten elements and replacement with modern paired material. The new joists to be physically separated from the host structure to avoid the reoccurrence of rot.

Where just the bearing is decayed, a local repair that will resupport the joist and isolate it from the wall can be considered.

For more extensive rot, the section will need to be cut back beyond the rot zone identified by H+R and an new timber paired and connected.



EXTRACT FROM CIRIA R111 (STRUCTURAL RENOVATION OF TRADITIONAL BUILDINGS)

2-The replacement of rotten timber lintels

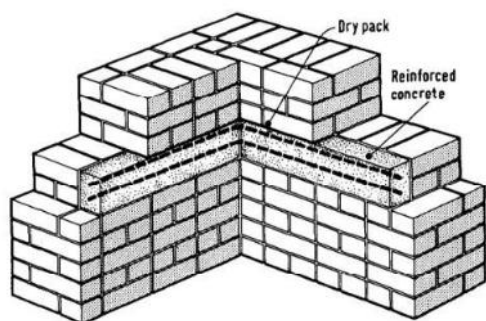
The removal of timber lintels that have already failed due to rot, or that will. Their replacement will likely be with modern prestressed concrete lintels to keep materials inert and to fit to the existing brick coursing.

3-The replacement of all embedded timber that is infected or rotten – wall plates and batons etc.

Embedded and rotten timber elements in the walls should be removed in sections and replaced with brick masonry wherever possible, in mortar to match the surrounding masonry.

4-The tying of adjacent masonry panels and corners where required.

It has been noted that certain walls, especially those around the rear closet wing require additional tying, possibly with the use of helical reinforcement or concrete elbows.



(b) Reinforced concrete elbow tie

EXTRACT FROM CIRIA R111 (STRUCTURAL RENOVATION OF TRADITIONAL BUILDINGS)

5-External local rebuilding of the corner pilaster and cornice.

The external façade will require partial rebuilding where the masonry and render has failed and deteriorated to the point that rendering along is not adequate.

For this element, an expert in masonry restoration may be considered to rebuild in as close as is practically possible to the original intent.

Below are excerpts of a 3D scan of the corner showing the corner failure.



FRONT ELEVATION



SIDE ELEVATION



PLAN

Record of geometry from LiDAR scanning



FRONT VIEW FROM CORNER BELOW

6-Repair or resupport of the front balcony

The front balcony, originally cantilevered, is currently supported on steel and timber props, the external edges having degraded and spalled away. The full balcony section should be repaired and a more sympathetic support system considered for the stone balcony, replacing the props.

We note that the neighbour with matching balcony along the street has installed bracketry below the balcony.



Although not an ideal solution, this could be considered. Another alternative would be to install small steel sections that cantilever out of the building beneath the balcony, with a back-span within the floor zone internally.

To avoid condensation and damp issues, these steel sections could be thermally broken at the façade line.

All repairs and restoration work should be carried out with due regard and consideration to the Hutton + Rostron reports with regard to suitable materials and recommendations around mortars, isolation and extent of work and the modification of the internal climate to dry the structure.