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ST GILES CIRCUS

LISTED BUILDINGS VISUAL STRUCTURAL REPORT

for

Consolidated Developments

1st December 2012

029-S-REP-003

Engenuiti
3b Maltings Place
Tower Bridge Road
London, SE1 3JB

LISTED BUILDINGS VISUAL STRUCTURAL REPORT

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Revision History

Rev	Date	Purpose/Status	Document Ref.	Comments
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Prepared by:

Clive Fussell
Director

Reviewed & Approved by:

Paul Grimes
Director

1 INTRODUCTION

1.1 General

1.1.1 Engenuiti has been appointed to provide civil and structural engineering design services for the St Giles Circus redevelopment adjacent to Tottenham Court Road station for Consolidated Developments in conjunction with ORMS Architecture Design and Sampson Associates.

1.1.2 This report has been produced for the exclusive use of Consolidated Developments and should not be used in whole or in part by any third parties without the express permission of Consolidated Developments or Engenuiti in writing.

1.1.3 This report should not be relied upon exclusively by Consolidated Developments for decision making purposes and may require reading in conjunction with other documents and drawings produced by the design team.

1.2 Purpose of Report

1.2.1 This report has been prepared to support the planning application and describes the structural form of the listed buildings within the development.

1.2.2 The report is based on site visits made during September and October 2012 which visited the accessible areas of the building. The report is hence a visual assessment only. Due to access issues and the multiple tenancies within the buildings it was not possible to visit every room within all the buildings, however sufficient access was obtained to comment on the structural form of the buildings.

1.2.3 Where maintenance issues were observed they are recorded, together with recommendations on issues that may arise during refurbishment. If a full structural survey of the buildings is required, opening up works would be necessary to expose the structure.

1.3 Drawing Images

1.3.1 Extracts from drawings prepared by ORMS and Sampson Associates have been used in the preparation of this report. Photographs have been taken and prepared by Engenuiti.

Figure 1.1 Location of Listed Buildings

2 No 9 DENMARK STREET

2.1 Description of Structure

2.1.1 No. 9 is one of a pair of terraced houses that the Camden listed building register dates from c1686-89. The front and rear walls are 3 storey high masonry construction with 3 openings per floor. At the rear one of the openings connects to a later masonry extension that houses kitchen and bathroom areas. The party walls are of masonry construction with two chimney breasts on the party wall to No. 10 that extend the full height of the building.

2.1.2 The floors are of timber construction, with floor boards observed to be running perpendicular to the front facade in the 2nd floor front office, the 1st floor front office and 1st floor rear workshop. It was not possible to observe the direction of the floor boards in all the other spaces however it is to be expected that the 1st, 2nd and 3rd floors span in the same direction, with joists spanning parallel to the front facade and trimmed around the chimney breasts.

Figure 2.1 Location of No 9 Denmark Street

Figure 2.2 Front & Rear Existing Elevations

2.1.3 At third floor level a mansard roof of early timber construction is formed behind the front parapet. The roof has a central valley which is supported by a Bressemer beam propped by an internal timber stud wall that divides the front rooms from the rear rooms.

2.1.4 The staircase is enclosed by a timber load bearing stud wall that runs the full height of the building and supports both the stair structure and the joists in the rear rooms.

2.1.5 At ground floor level the front facade has been opened up to create a shop front and the internal stud wall was replaced with a central 4 inch square post, which has recently been removed and replaced with a steel beam that spans between the party wall and a new steel post built into the stair wall.

2.1.6 The ground floor structure is of timber construction with joists spanning between the party wall and either the stair stud wall at the rear or a Bressemer beam in the front of the building. A brick vault extends under Denmark Street.

2.2 Condition and Observed Maintenance issues

2.2.1 The timber stud wall around the stairs has dropped significantly (in the order of 150mm) since the construction of the stair case. Some of this movement is likely to be old, however the Facilities Manager reported that the stairwells were redecorated in the last 18 months and cracks have appeared in the finishes since then, particularly between the stair wall and the rear wall. Furthermore doors on the first and third floor were eased by 0.25 inch last week and are reported to be sticking again, along with shutters to the front windows on the first floor.

2.2.2 During a second visit on 4th October the builders had opened up the stud wall at ground floor level to install insulation and revealed poor bearing and some rot to the timbers. More rot was noted in the wall plate on the rear wall at ground floor level, this may have contributed to the movement noted in the rear wall. In view of the ongoing movement and the fact that the wall had been opened up it was recommended that the stud wall was strengthened with additional vertical timber studs and noggins at ground floor and basement level to reduce the risk/magnitude of on-going movement.

2.2.3 The suspended floors at first and third floors have sagged significantly and are springy when walked upon. At ground floor, the floor has been levelled with new finishes however the existing Bressemer beam at the front has sagged considerably over the years.

2.2.4 Apart from visible movement around doors and the deflection of the floor it was not possible to report on the condition of the party walls and stud walls in the office spaces due to timber panelling.

2.2.5 At top floor level new cracks were reported in the rear wall adjacent to the stair and in the parapet around the roof of the rear extension. In the front office on the top floor the strut between the central roof beam and the internal stud wall has moved considerably although this does not appear to be recent. Also in the front office an area of ceiling finishes have blown, most likely as a result of water ingress.

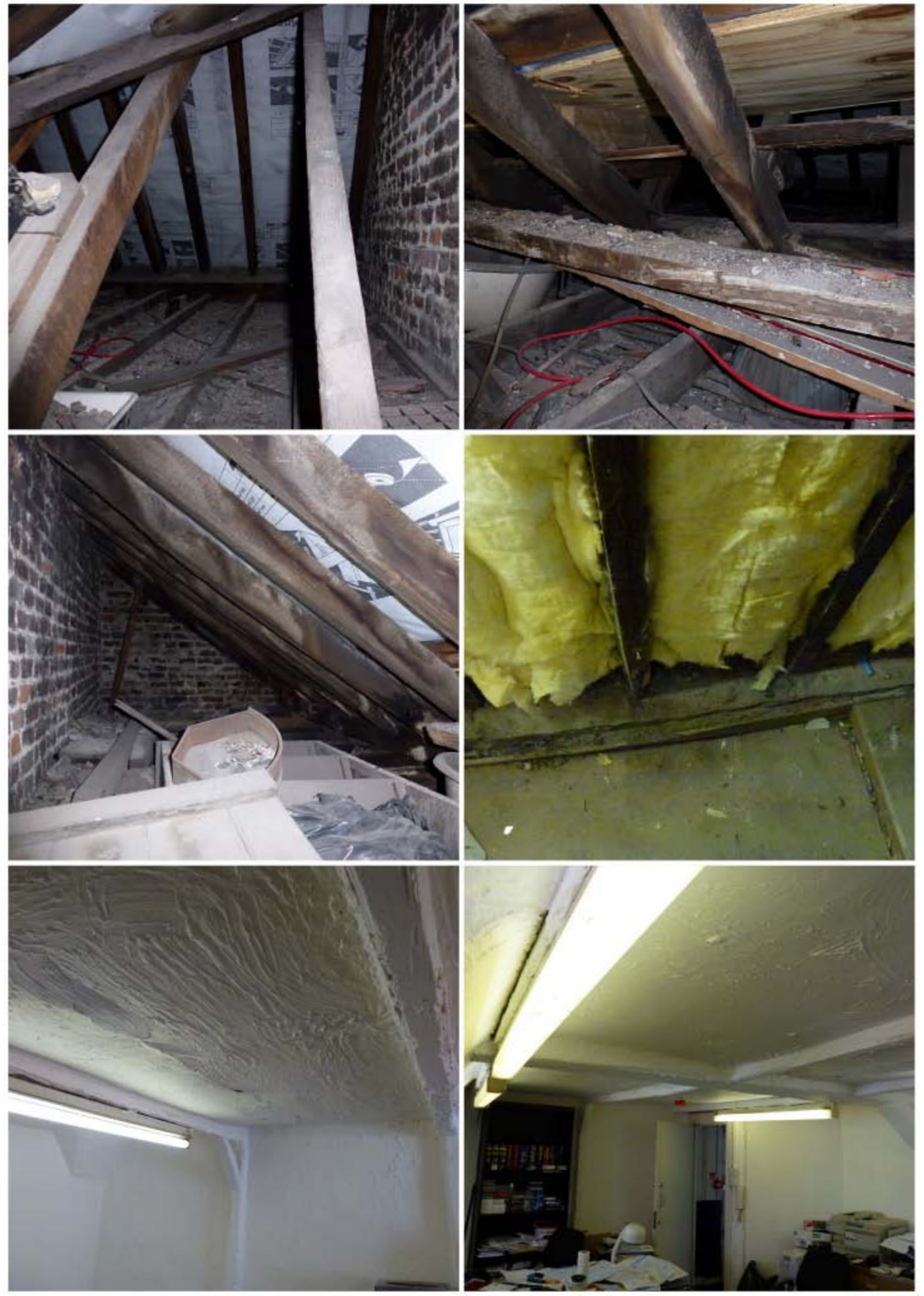
2.3 Refurbishment

2.3.1 Floor structures: The floor boards will be lifted to install fire and acoustic insulation. It is also planned to install new services in the floor structures for heating and kitchen drainage. The cumulative effect of cutting or notching of holes in existing floor beams and joists can significantly weaken the structure, therefore existing routes/holes through the joists should be used wherever possible. Where it is not possible to use existing routes, the floor will need strengthening by doubling up the joists prior to cutting new openings.

2.3.2 The doubling up of floor joists will also reduce the future deflections that floor structures will experience and therefore improve the lifetime of the structure and historic finishes. Where floor boards are lifted during the refurbishment works it is recommended that the opportunity is taken to inspect the condition of the junction between the timbers and the supporting party or load bearing stud walls as rot or excessive movement could have significantly reduced the available bearing at these junctions. Additional loading of the floor structures (eg through the application of heavy finishes or finishes to level the floors) should be avoided unless the condition of the floor structure is first inspected and assessed.

2.3.3 Roof structures: during the refurbishment maintenance should be undertaken to clear all roof valleys and gutters of debris and ensure that falls are maintained to the outlet. Flashings to chimneys and parapets should be inspected or replaced and all sources of leaks and damp traced and repaired.

2.3.4 Walls: ties should be provided between walls and floor structures to improve the robustness of the structure and rotten timbers replaced.



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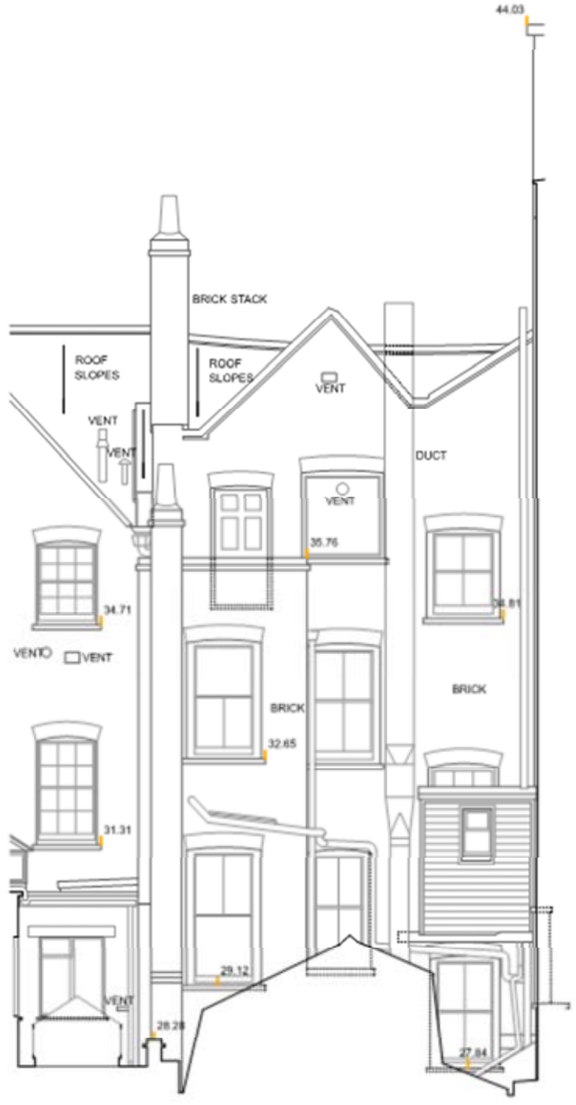

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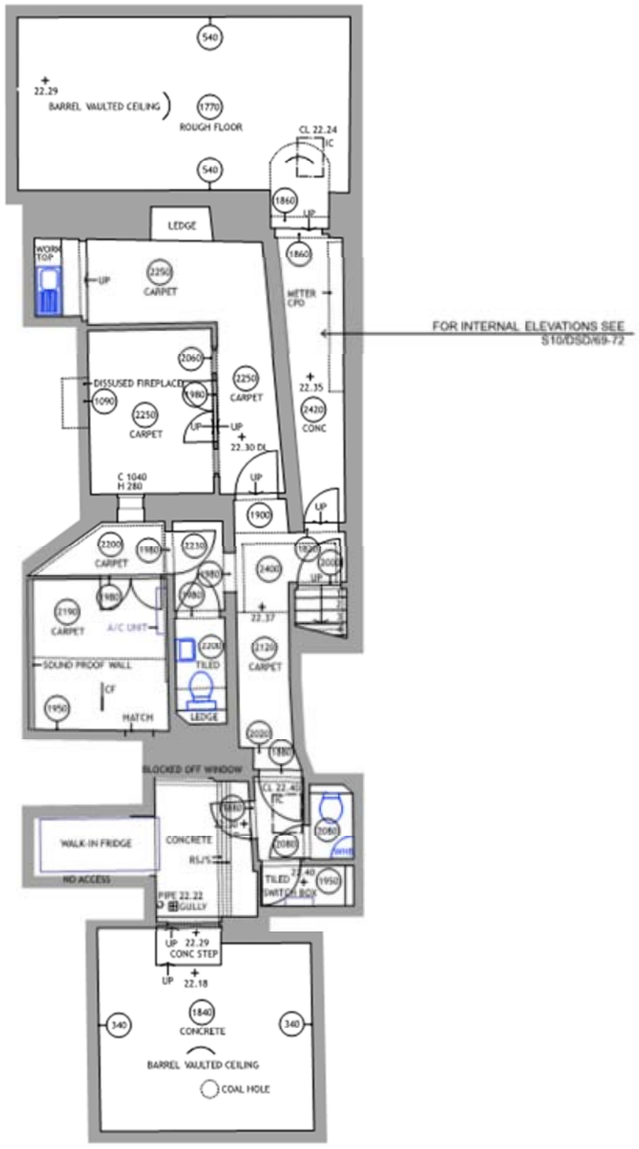
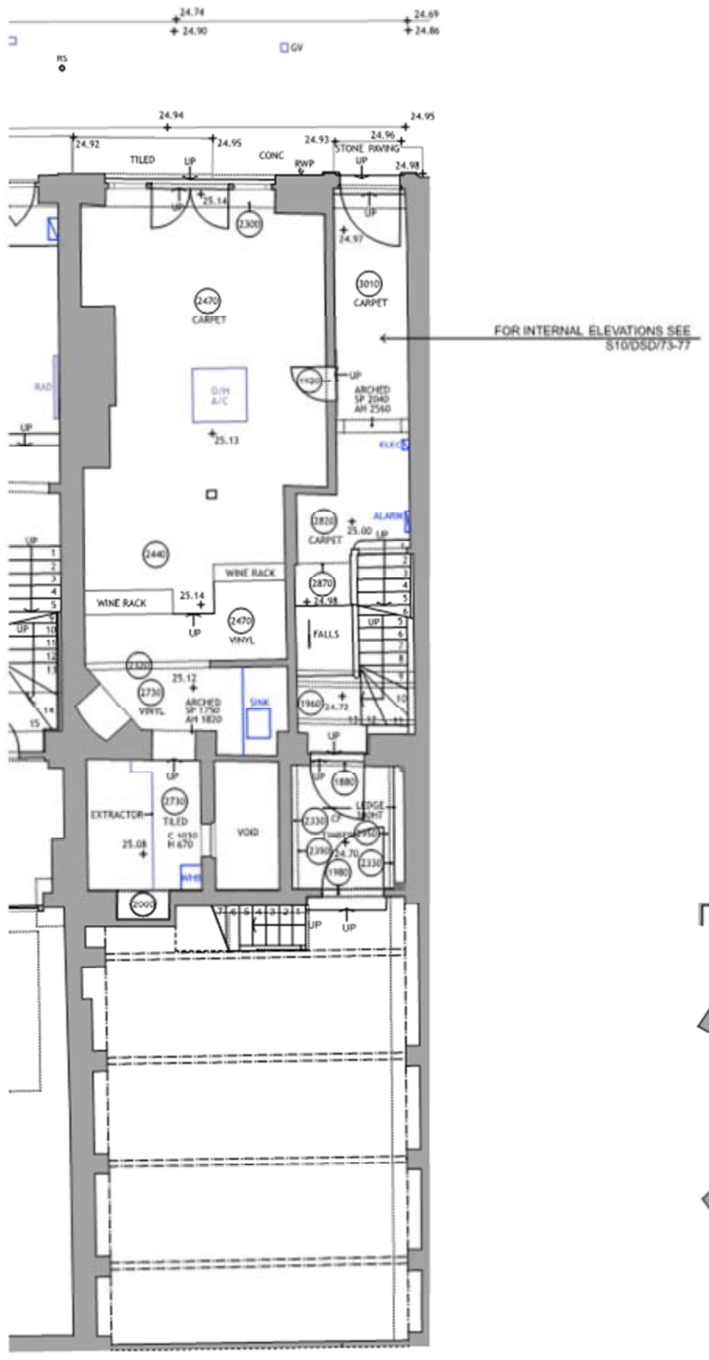


4 No9 DENMARK STREET
EXISTING BASEMENT PLANS



5 No9 DENMARK STREET
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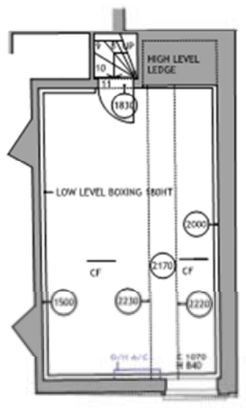

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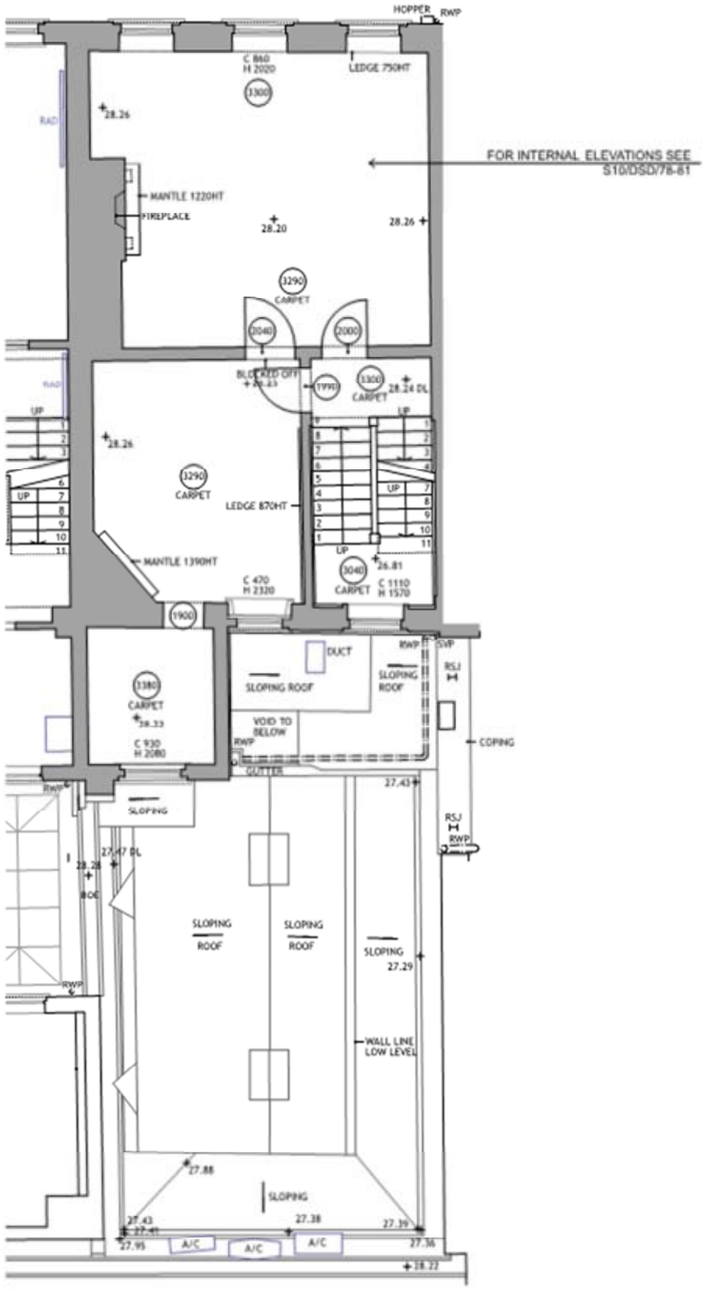

7 No9 DENMARK STREET
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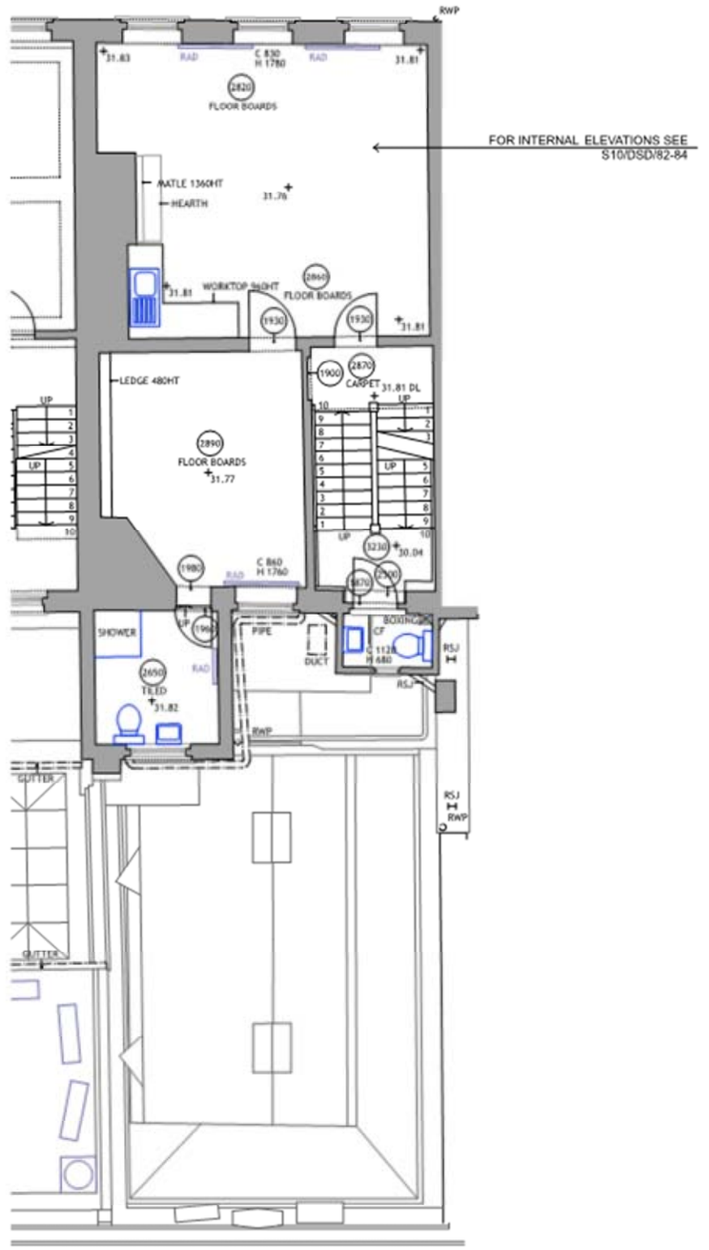

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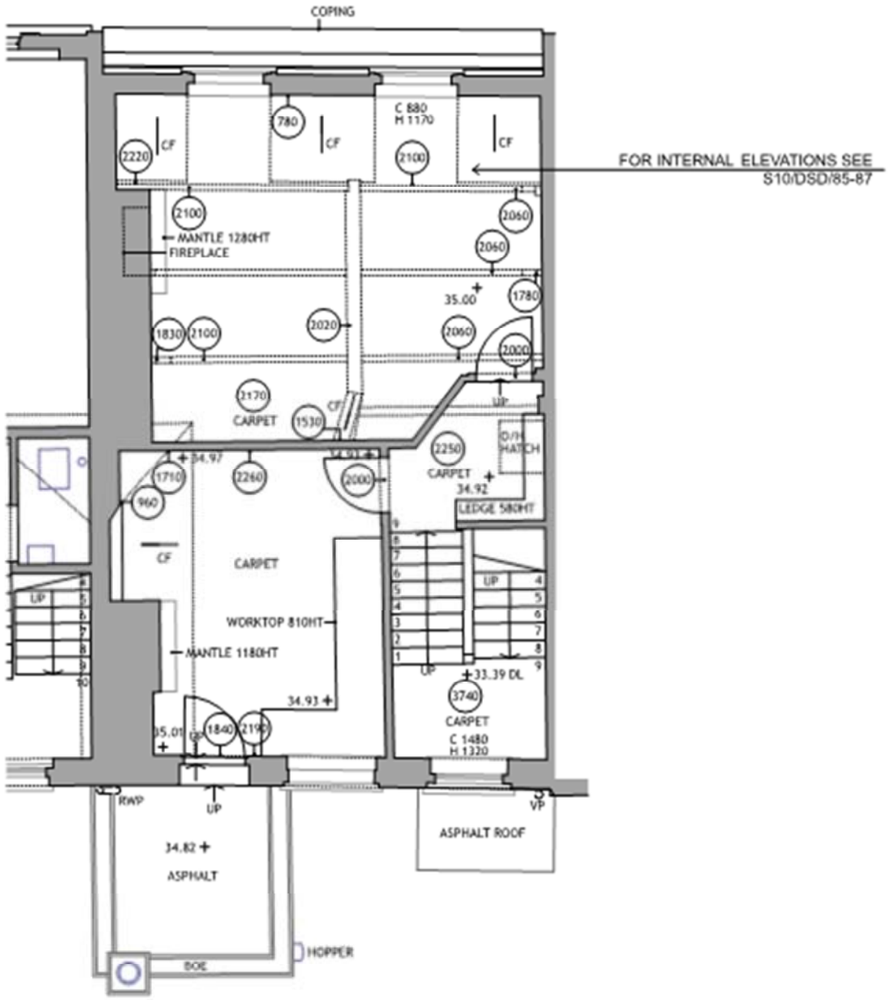

9 No9 DENMARK STREET
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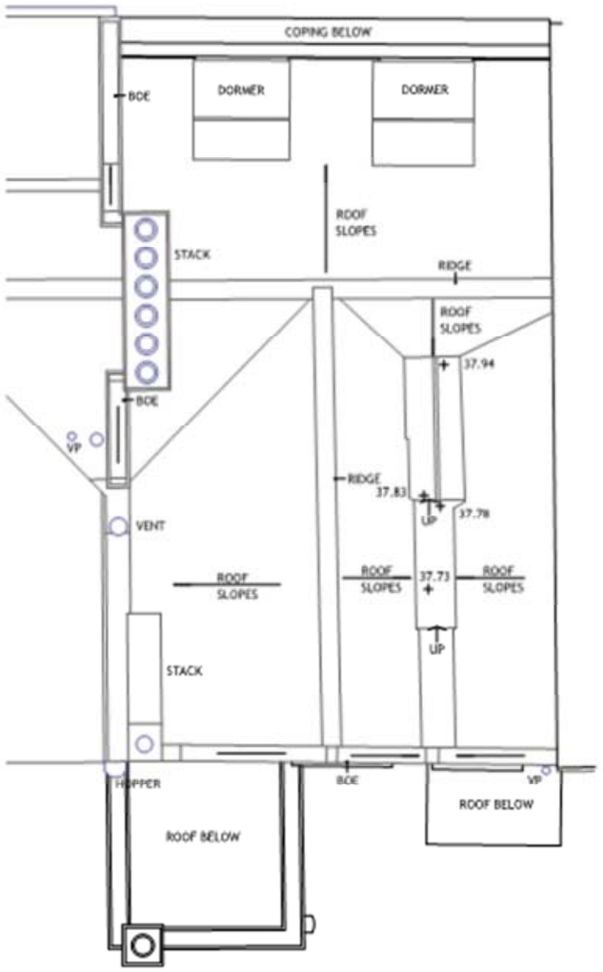


10 No9 DENMARK STREET
EXISTING ROOF PLANS

3 No 10 DENMARK STREET

3.1 Description of Structure

3.1.1 No. 10 is the second of a pair of terraced houses that the Camden listed building register dates from c1686-89. The front and rear walls are 3 storey high masonry construction with 3 openings per floor. At the rear one of the openings connects to a later masonry extension that houses kitchen and bathroom areas. The party walls are of masonry construction with two chimney breasts on the party wall to No. 11 that extend the full height of the building.

3.1.2 The floors are believed to be of timber construction, although due to modern floor finishes it was not possible to confirm the construction or direction of span. It is anticipated that timber joists span parallel to the front facade and are trimmed around the chimney breasts. At first floor level some of the internal walls have been removed and replaced with steel beams and columns.

Figure 3.1 Location of No 10 Denmark Street

3.1.3 At third floor level a modern mansard roof is formed behind the front parapet. A valley gutter separates the roof structure from the roof of No.9.

3.1.4 The staircase is enclosed by a masonry wall that runs the full height of the building. It is assumed that this wall supports both the stair structure and the floor in the rear rooms.

Figure 3.2 Front & Rear Existing Elevations

3.2 Condition and Observed Maintenance issues

3.2.1 The building appears to have undergone a programme of refurbishment. Although the structure was generally not visible, the floors were level and there was little sign of movement. Some minor cracking was noted on the party wall to No. 9 on the landing at first and second floor. This may be related to water ingress that has occurred below the valley gutter that separated the roofs of Nos 9 and 10. It is recommended that this valley gutter is repaired as soon as possible and that it is re-levelled to stop water ponding in the gutter.

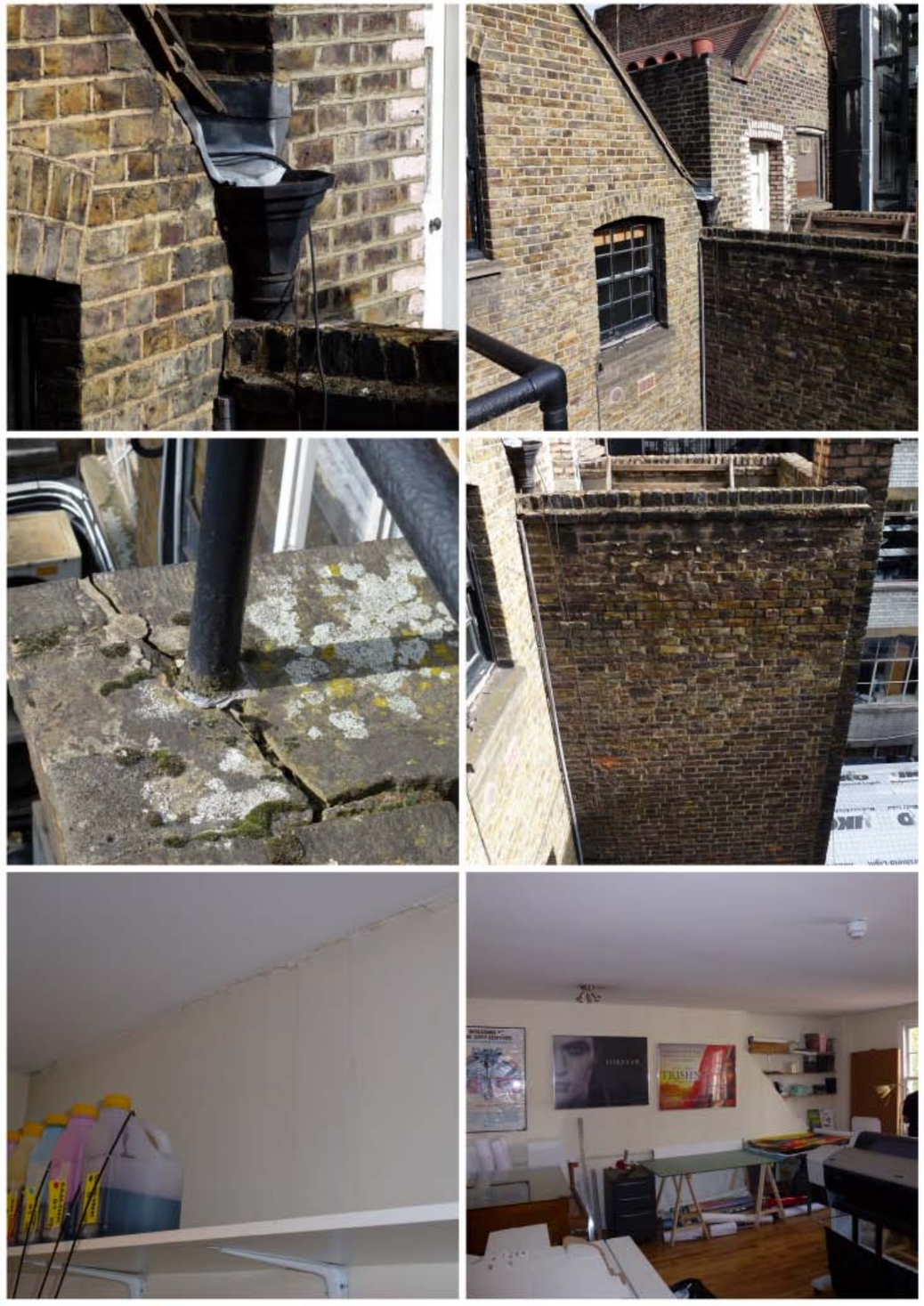
3.2.2 On the roof of the rear extension a coping stone to the parapet is cracked and in danger of falling. This should be repaired or replaced. Some water ingress was recorded to the front of the flat roof adjacent to No. 9.

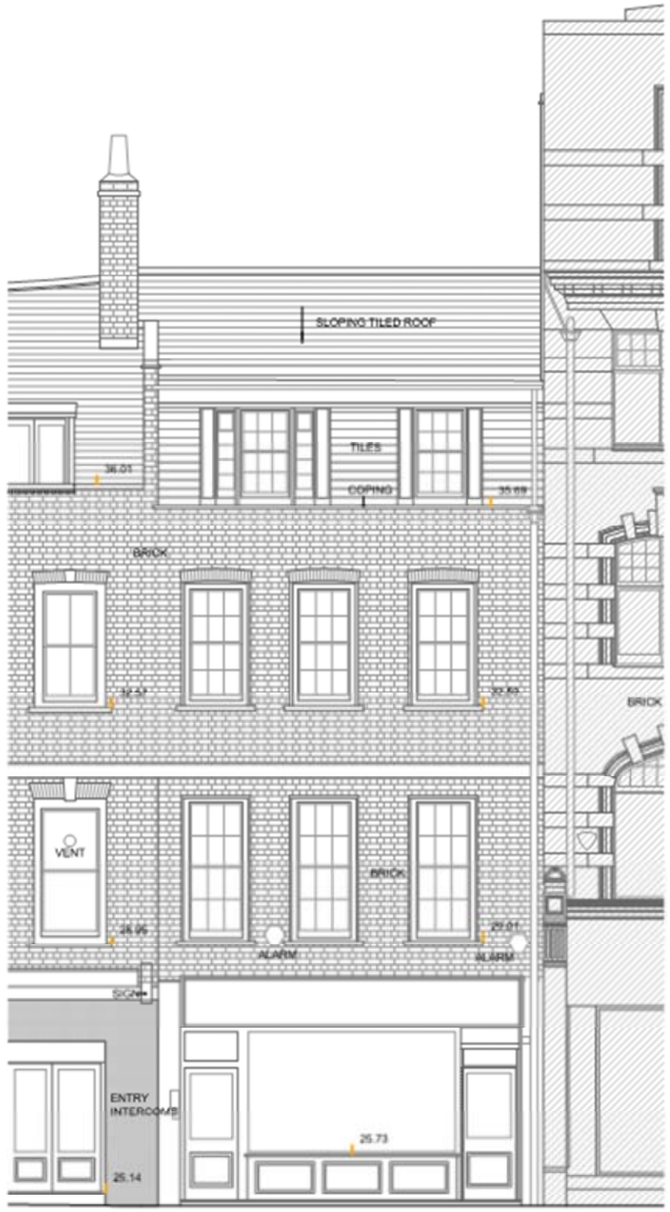
3.3 Refurbishment

3.3.1 Floor structures: The floor boards will be lifted to install fire and acoustic insulation. It is also planned to install new services in the floor structures for heating and kitchen drainage. Opening up works prior to refurbishment will confirm the make-up and condition of the floor structures. If the structures have been rebuilt and are in good condition then new services runs can be installed in the structural zone provided that any cutting of holes is done in accordance with Building Regulations.

3.3.2 If the floors have been levelled and the existing structure is showing signs of sagging the cumulative effect of cutting or notching of holes in existing floor beams and joists can significantly weaken the structure, therefore existing routes/holes through the joists should be used wherever possible. Where it is not possible to use existing routes, the floor will need strengthening by doubling up the joists prior to cutting new openings. The doubling up of floor joists will also reduce the future deflections that floor structures will experience and therefore improve the lifetime of the structure and historic finishes.

3.3.3 Roof structures: the refurbishment proposals include the rebuilding of the mansard roof structure. Maintenance should be undertaken to clear all roof valleys and gutters of debris and ensure that falls are maintained to the outlet. Flashings to chimneys and parapets should be inspected or replaced and all sources of leaks and damp traced and repaired.





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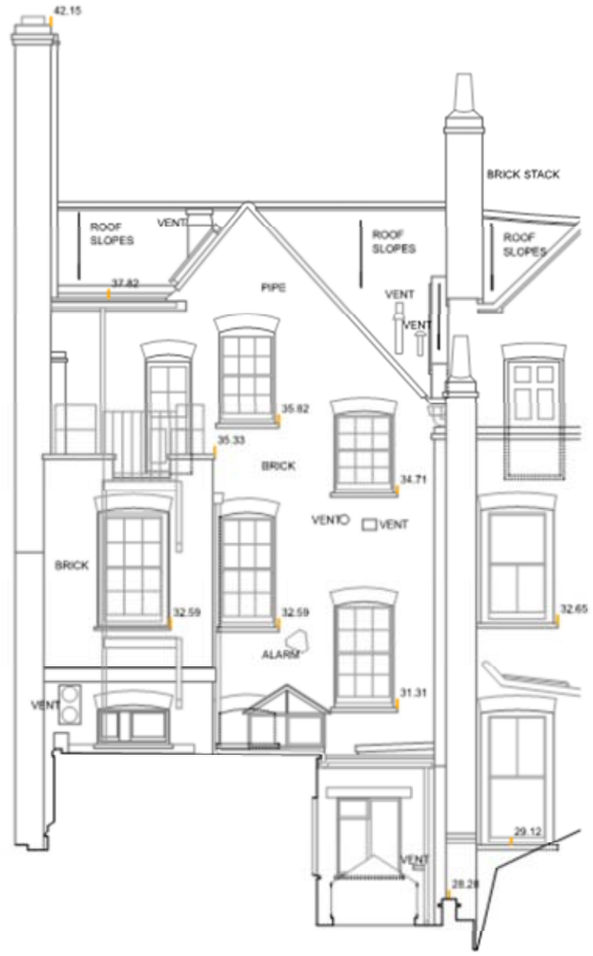

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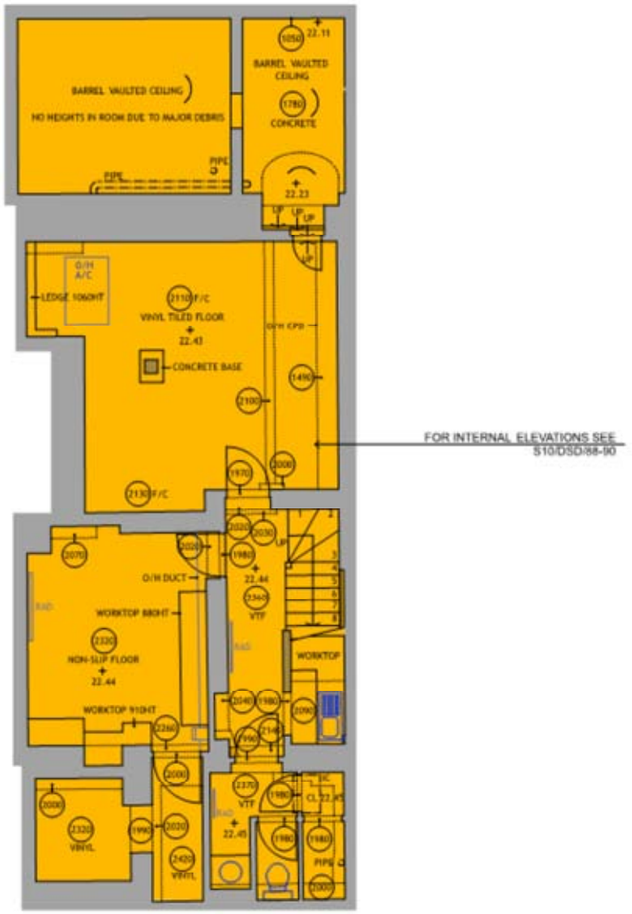

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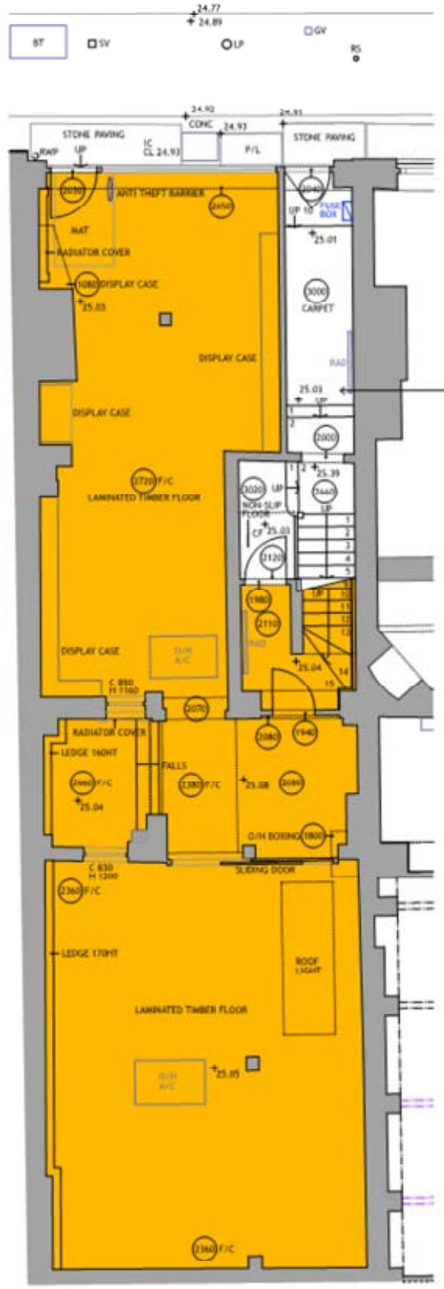

6 No10 DENMARK STREET
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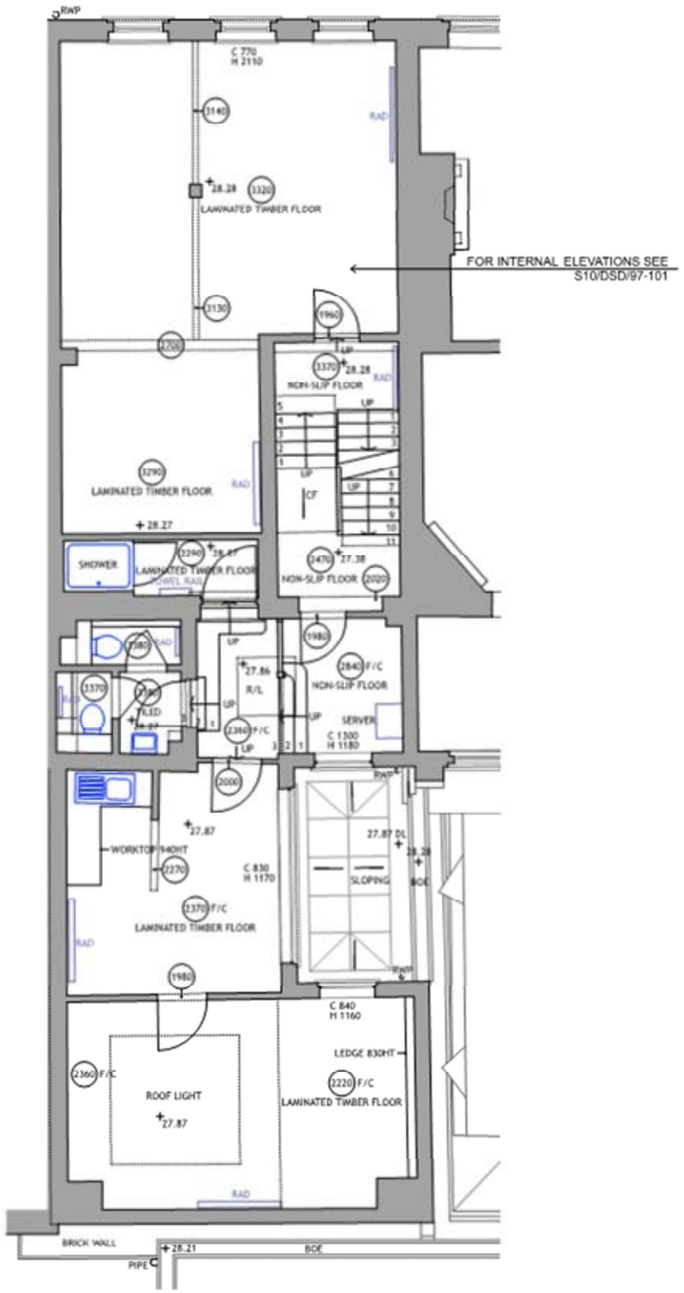

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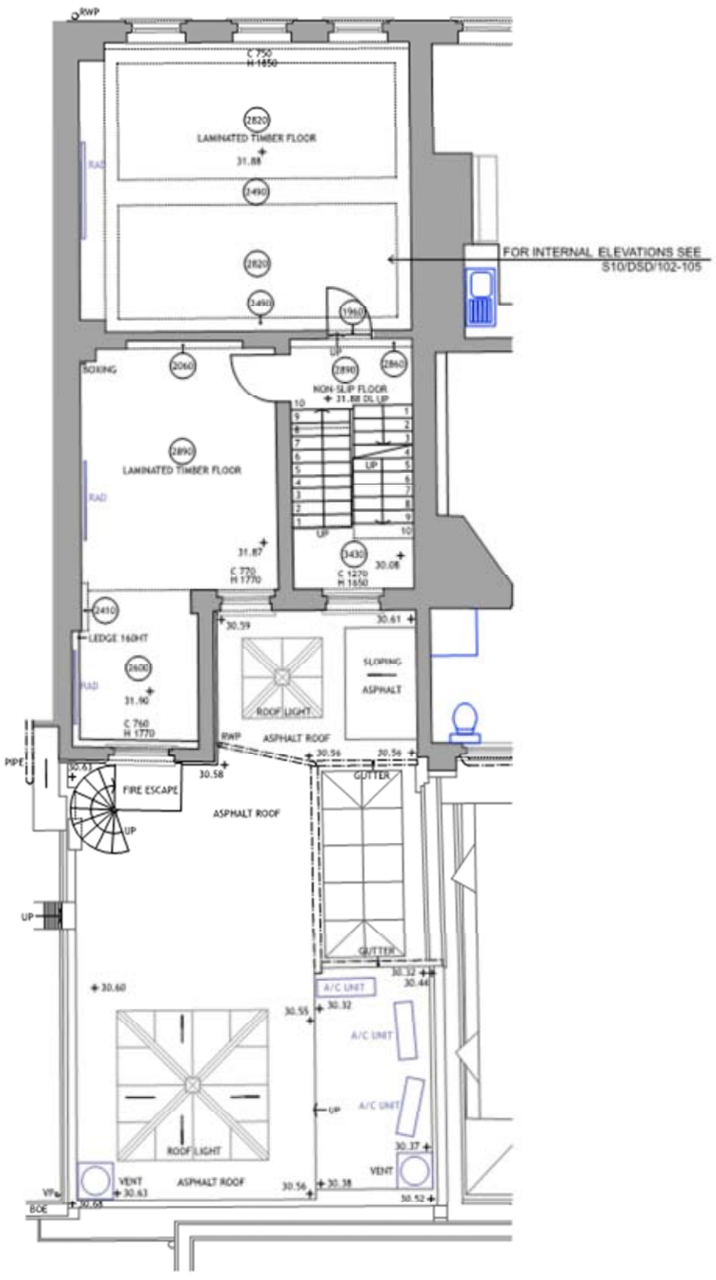

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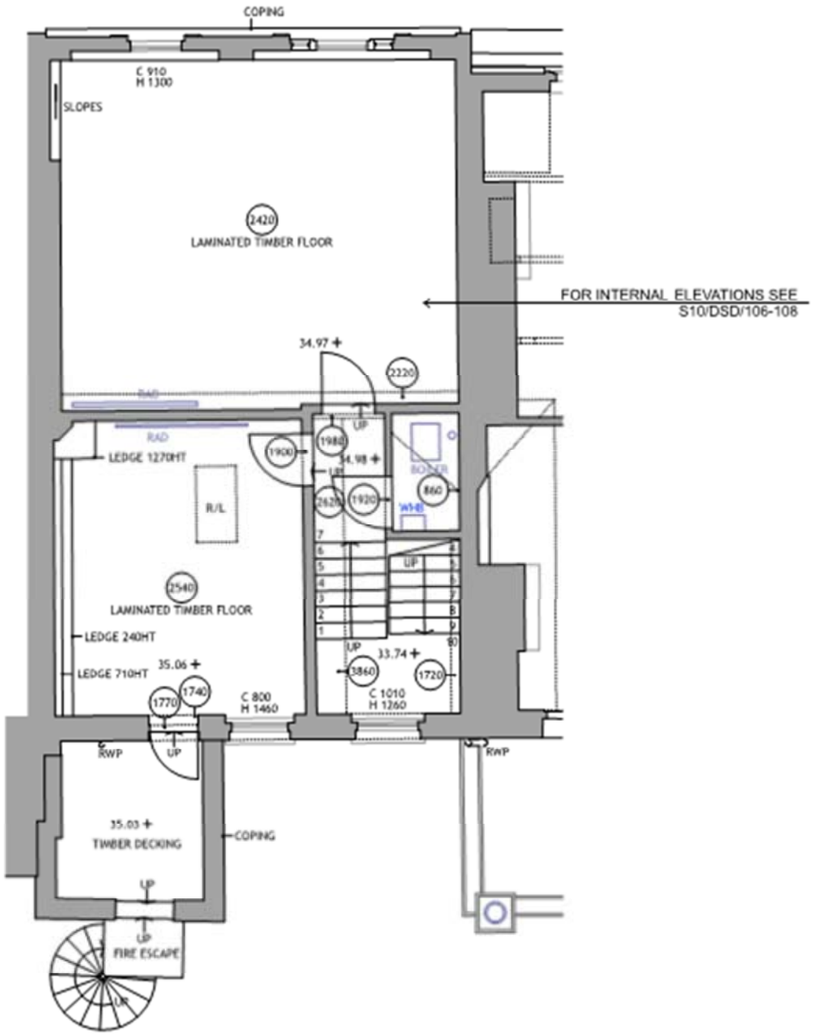

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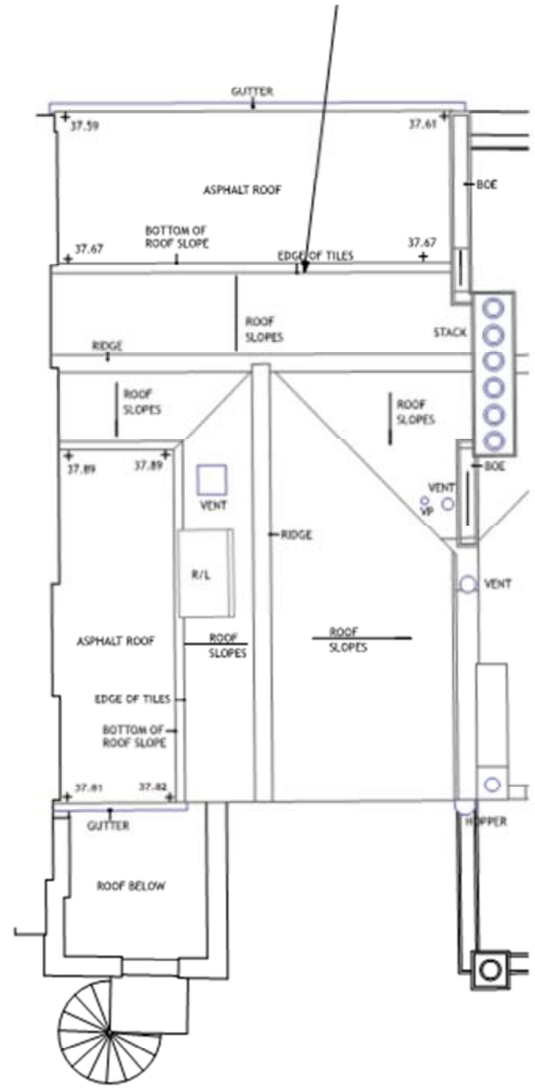


10 No10 DENMARK STREET
EXISTING ROOF PLANS

4 No 7 DENMARK STREET

4.1 Description of Structure

4.1.1 No. 7 is one of a further pair of terraced houses that the Camden listed building register dates from c1686-89. The front and rear walls are 3 storey high masonry construction with 3 openings per floor. At the rear one of the openings connects to a later masonry extension that typically houses kitchen and bathroom areas. The party walls are of masonry construction.

4.1.2 The floors are of timber construction, with floor boards observed to be running perpendicular to the front facade in the 1st floor front and rear offices. It was not possible to observe the direction of the floor boards in all the other spaces however it is to be expected that the 1st, 2nd and 3rd floors span in the same direction, with joists spanning parallel to the front facade and trimmed around the chimney breasts.

Figure 4.1 Location of No 7 Denmark Street

4.1.3 The loft space above the third floor has been converted into bedroom accommodation with the roof and the loft space supported by original timber beams that span between the party walls.

4.1.4 The staircase is enclosed by a timber load bearing stud wall that runs from ground floor to the top of the building and supports both the stair structure and the joists in the rear rooms. At basement level the load bearing stud wall has been replaced with a later beam to open up the stairwell. This beam has been boxed out with plasterboard construction.

Figure 4.2 Front & Rear Existing Elevations

4.1.5 At ground floor level the masonry front facade remains, although the internal stud wall between the front and rear rooms has been removed to form a bar area. A column remains on the line of the stud wall, as it is clad it was not possible to tell if this was a timber column or a later steel column.

4.1.6 The ground floor structure is of timber construction with joists spanning between the party wall and either the stair stud wall at the rear or a Bressemer beam in the front of the building. A brick vault extends under Denmark Street.

4.2 Condition and Observed Maintenance issues

4.2.1 In common with No.9, the timber stud wall around the stairs has dropped significantly (in the order of 150mm) since the construction of the stair case. This is observed in both the fall across the landing and at the door heads between the landings and the rooms at the front. The facilities manager reported that the stairs and landings were repainted 6 months ago, no significant signs of movement have been recorded since therefore it is likely that the movement of the timber stud wall has stopped, possibly as a result of the installation of the transfer beam at basement level.

4.2.2 The suspended floors at first second and third floors have sagged significantly and are springy when walked upon. At ground floor the floor has been levelled with new finishes, however the existing Bressemer beam at the front has sagged considerably over the years.

4.2.3 Apart from visible movement around doors and the deflection of the floor it was not possible to report on the condition of the party walls and stud walls in the office spaces due to timber panelling.

4.2.4 The masonry walls to the rear extension have experienced noticeable movement resulting in dropping of the rear window arch at second floor and cracking to the side return wall. The rear gable leans noticeably and has been tied to the loft floor with steel ties and circular spreader plates to reduce further movement. Cracking was also noted in the rear masonry wall above the 3rd floor half landing.

4.2.5 The valley gutter adjacent to the party wall to No. 8 is partially blocked with debris and should be cleaned out. Water ingress was also noted in the 2nd floor front room adjacent to this party wall, indicating that the flashing between the roof and the party wall is leaking.

4.2.6 The valley gutter adjacent to No 6 (at top landing) has been leaking, causing a damp problem at the top of the stairs. This is adjacent to the chimney to No. 6 which was rebuilt by Crossrail.

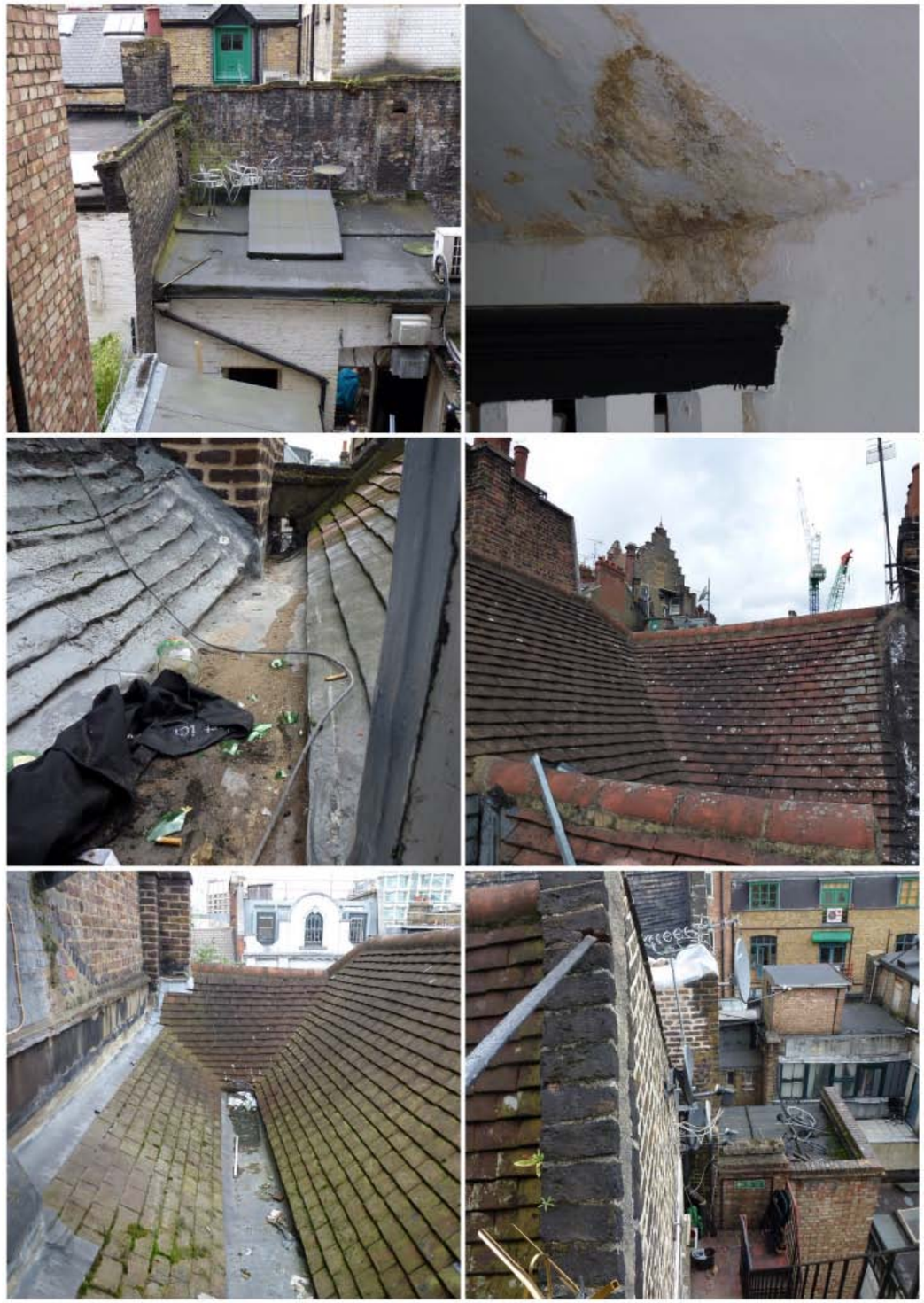
4.3 Refurbishment

4.3.1 Floor structures: The floor boards will be lifted to install fire and acoustic insulation. It is also planned to install new services in the floor structures for heating and kitchen drainage. The cumulative effect of cutting or notching of holes in existing floor beams and joists can significantly weaken the structure, therefore existing routes/holes through the joists should be used wherever possible. Where it is not possible to use existing routes, the floor will need strengthening by doubling up the joists prior to cutting new openings.

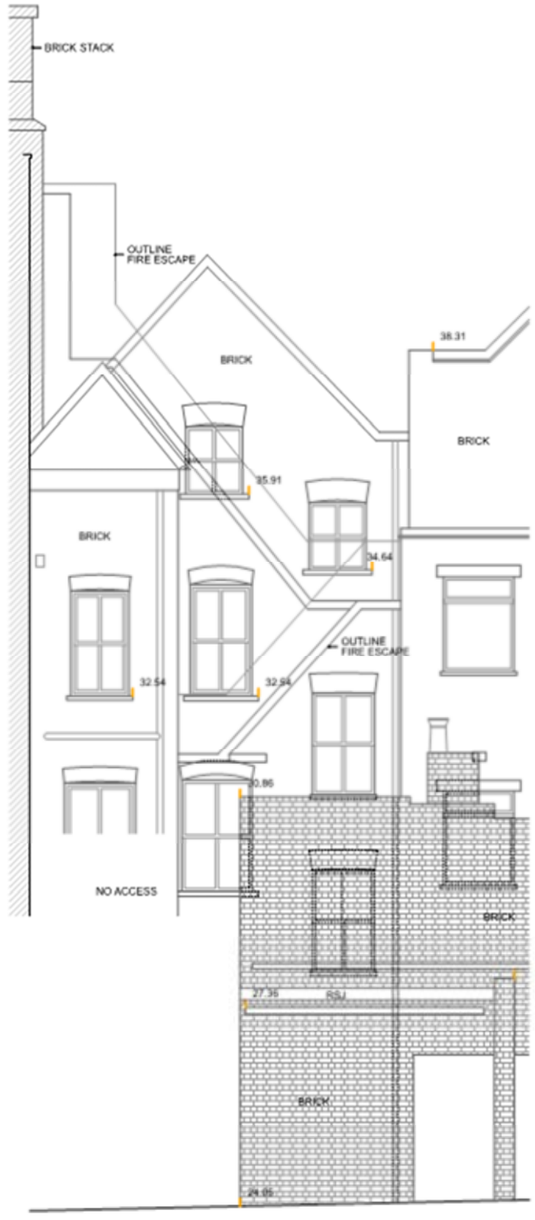
4.3.2 The doubling up of floor joists will also reduce the future deflections that floor structures will experience and therefore improve the lifetime of the structure and historic finishes. Where floor boards are lifted during the refurbishment works it is recommended that the opportunity is taken to inspect the condition of the junction between the timbers and the supporting party or load bearing stud walls as rot or excessive movement could have significantly reduced the available bearing at these junctions. Additional loading of the floor structures (eg through the application of heavy finishes or finishes to level the floors) should be avoided unless the condition of the floor structure is first inspected and assessed.

4.3.3 Roof structures: during the refurbishment maintenance should be undertaken to clear all roof valleys and gutters of debris and ensure that falls are maintained to the outlet. Flashings to chimneys and parapets should be inspected or replaced and all sources of leaks and damp traced and repaired.

4.3.4 Walls: ties should be provided between walls and floor structures to improve the robustness of the structure and rotten timbers replaced. Walls should be inspected for rotten timbers, especially at ground and basement levels which could cause the movement observed. It is recommended that the cracks are monitored following the works to check for any on-going movement. If desired the cracks can be filled with lime mortar to reduce water penetration, although this may require on-going maintenance.



1 No7 DENMARK STREET
EXISTING EXTERNAL FRONT ELEVATION



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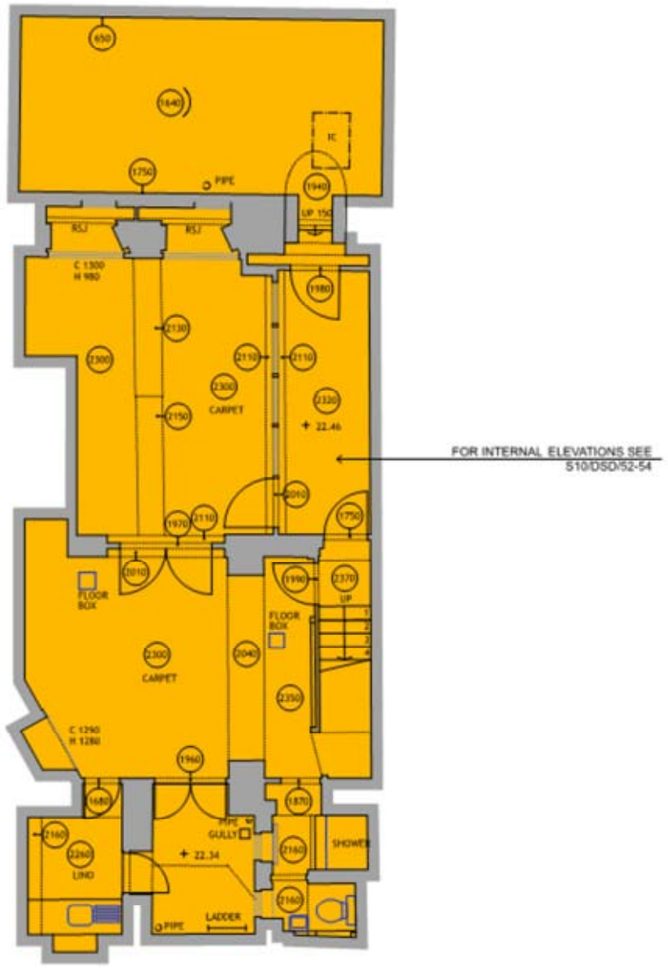

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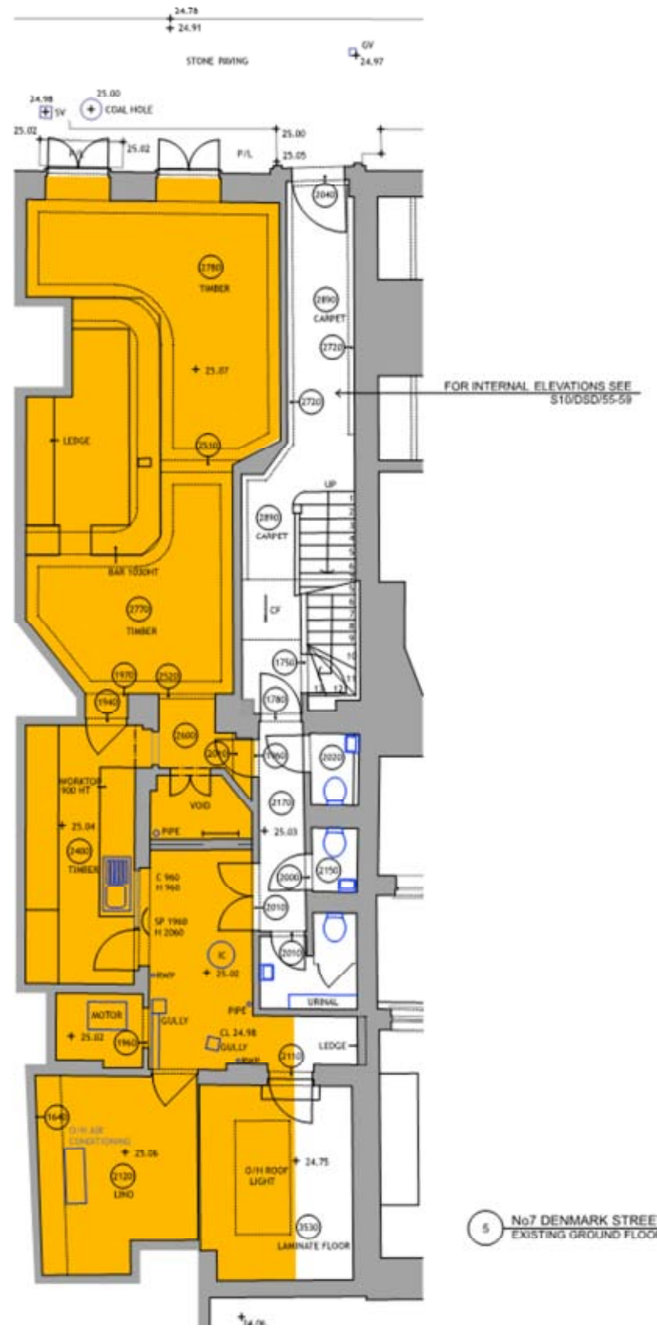

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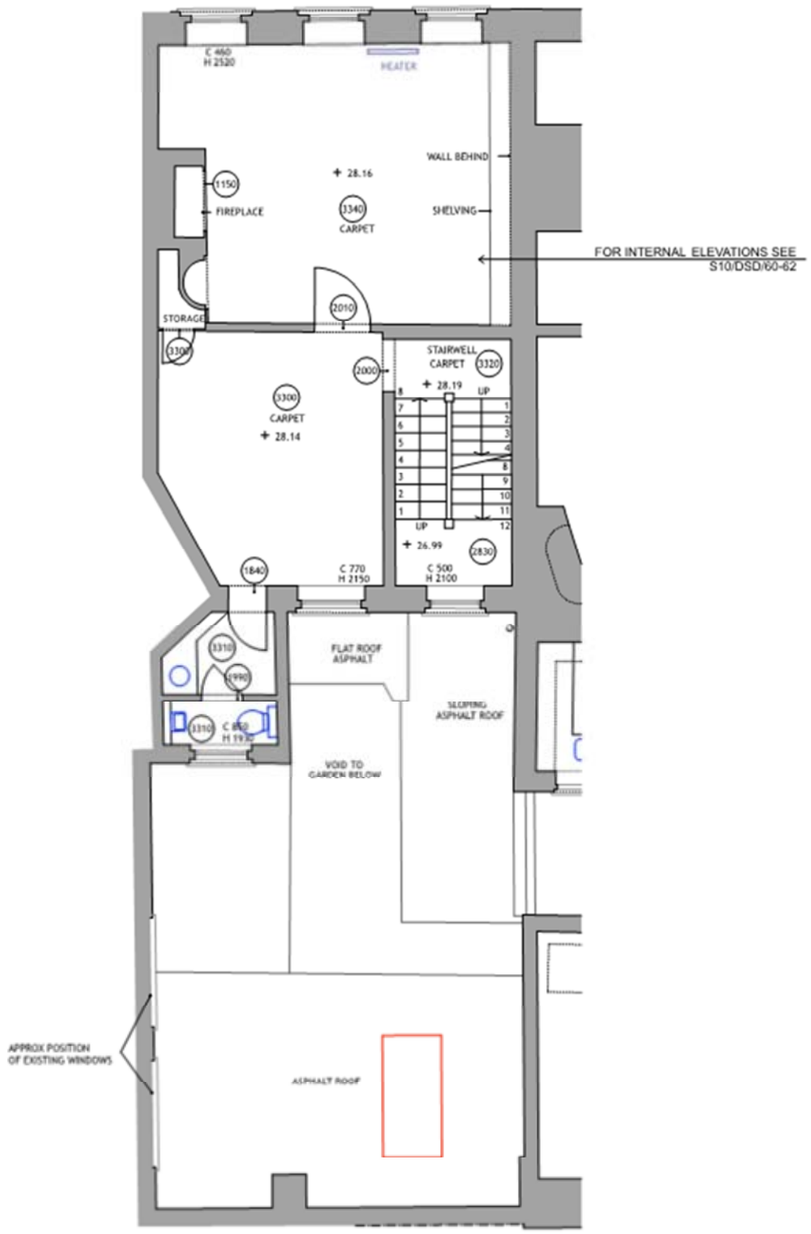

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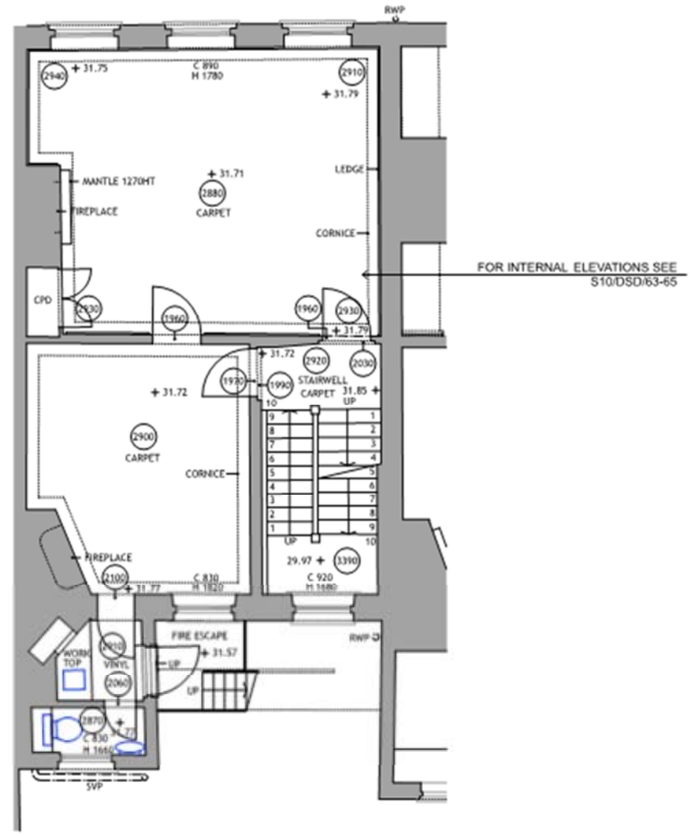

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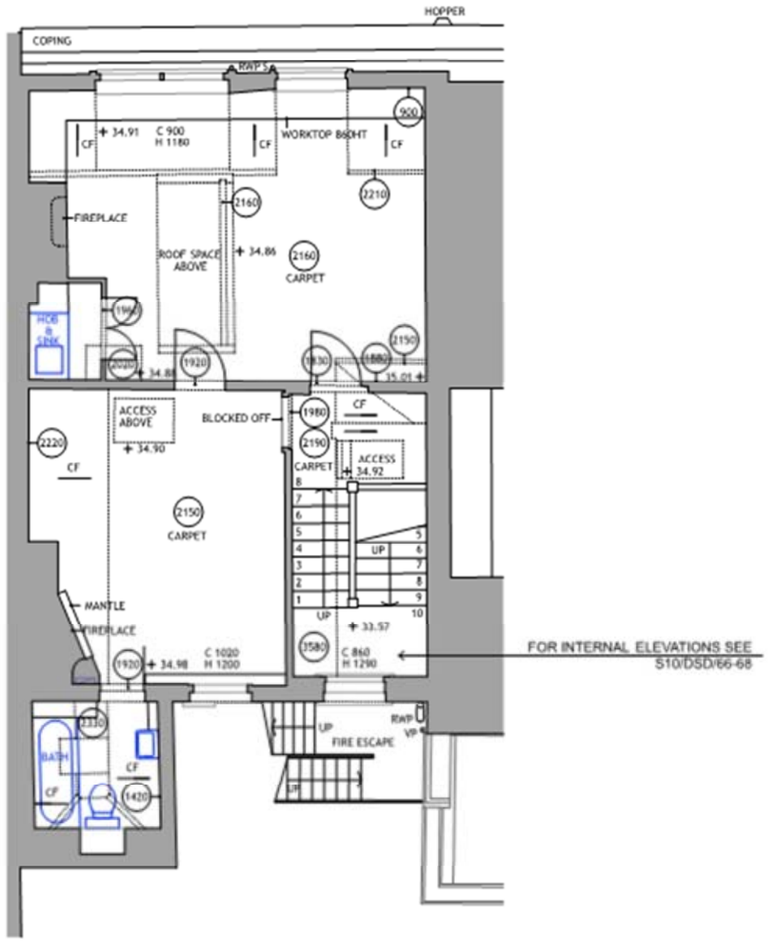
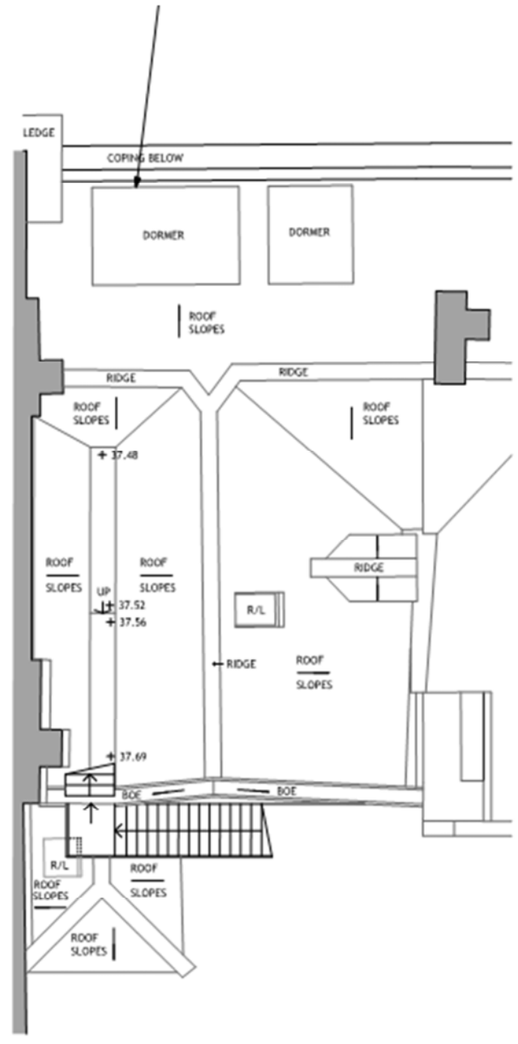


8 No7 DENMARK STREET
EXISTING THIRD FLOOR PLANS



10 No7 DENMARK STREET
EXISTING ROOF PLANS

5 No 6 DENMARK STREET

5.1 Description of Structure

5.1.1 No. 6 is the second of a pair of terraced houses that the Camden listed building register dates from c1686-89. The front and rear walls are 3 storey high masonry construction with 3 openings per floor. At the rear one of the openings connects to a later masonry extension that houses kitchen and bathroom areas. The party walls are of masonry construction with two chimney breasts on the party wall to No. 7 that extend the full height of the building.

5.1.2 The floors are of timber construction with floor boards observed perpendicular to the front facade at ground, 1st and 3rd floors indicating that joists span parallel to the front facade and are trimmed around the chimney breasts.

Figure 5.1 Location of No 6 Denmark Street

5.1.3 At third floor level a mansard roof of timber construction is formed behind the front parapet and is supported by timber beams that span between the party walls.

5.1.4 The staircase is enclosed by a timber load bearing stud wall that runs the full height of the building and supports both the stair structure and the joists in the rear rooms. Panelling and finishes meant that it was not possible to tell if this had been replaced with a masonry wall at basement level.

Figure 5.2 Front & Rear Existing Elevations

5.1.5 At ground floor level the masonry front facade remains, and the internal stud wall between the front and rear rooms is provided with a double door opening.

5.1.6 The ground floor structure is of timber construction with joists spanning between the party wall and either the stair stud wall at the rear or a Bressemer beam in the front of the building. A brick vault extends under Denmark Street.

5.1.7 At the rear of the property there is a two storey masonry building of a later period with a timber flat roof and a suspended timber floor.

5.2 Condition and Observed Maintenance issues

5.2.1 In common with No.7, the timber stud wall around the stairs has dropped significantly (in the order of 100mm) since the construction of the stair case. This is observed in both the fall across the landing and at the door heads between the landings and the rooms at the front. No significant signs of recent further movement we noted in the decorative finishes.

5.2.2 The suspended floors at first, second and third floors have sagged noticeably and are slightly springy when walked upon. Recent cracks were reported in the 2nd floor ceiling for the front office, these could be consistent with sagging of the floor. At ground floor the floor has been levelled with new finishes, however the existing Bressemer beam at the front has sagged considerably over the years.

5.2.3 Apart from visible movement around doors and the deflection of the floor it was not possible to report on the condition of the party walls and stud walls in the office spaces due to timber panelling.

5.2.4 The rear wall contains timber wall plates these were observed to have rotted at ground floor level, particularly adjacent to the later toilets.

5.2.5 At roof level, water ingress from the valley gutter adjacent to No.5 had occurred adjacent to the top landing. The waterproofing to the flat roof to the two storey building at the rear of the property has failed water ingress has occurred and if the roof is not made weather tight soon the roof timbers will decay.

5.3 Refurbishment

5.3.1 Floor structures: The floor boards will be lifted to install fire and acoustic insulation. It is also planned to install new services in the floor structures for heating and kitchen drainage. The cumulative effect of cutting or notching of holes in existing floor beams and joists can significantly weaken the structure, therefore existing routes/holes through the joists should be used wherever possible. Where it is not possible to use existing routes, the floor will need strengthening by doubling up the joists prior to cutting new openings.

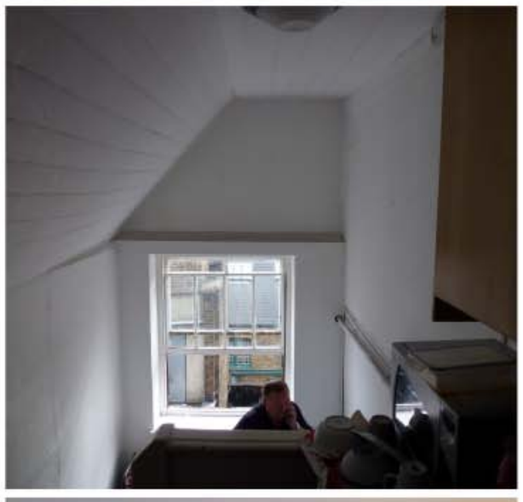
5.3.2 The doubling up of floor joists will also reduce the future deflections that floor structures will experience and therefore improve the lifetime of the structure and historic finishes Where floor boards are lifted during the refurbishment works it is recommended that the opportunity is taken to inspect the condition of the junction between the timbers and the supporting party or load bearing stud walls as rot or excessive movement could have significantly reduced the available bearing at these junctions. Additional loading of the floor structures (eg through the application of heavy finishes or finishes to level the floors) should be avoided unless the condition of the floor structure is first inspected and assessed.

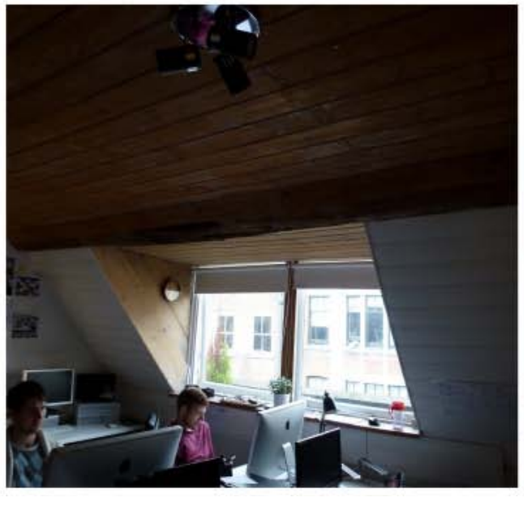
5.3.3 Roof structures: during the refurbishment maintenance should be undertaken to clear all roof valleys and gutters of debris and ensure that falls are maintained to the outlet. Flashings to chimneys and parapets should be inspected or replaced and all sources of leaks and damp traced and repaired. The water proofing to the flat roof at the rear of the property needs to be repaired.

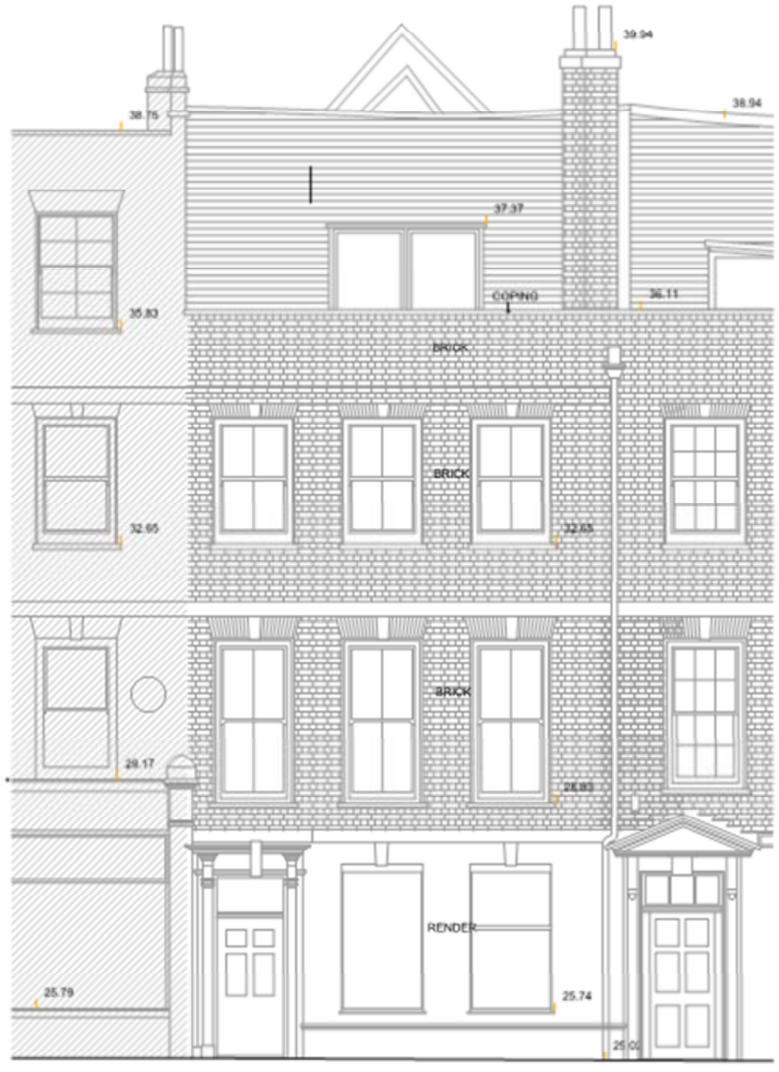
5.3.4 Walls: ties should be provided between walls and floor structures to improve the robustness of the structure and rotten timbers replaced. Walls should be inspected for rotten timbers, especially at ground and basement levels which could cause the movement observed.





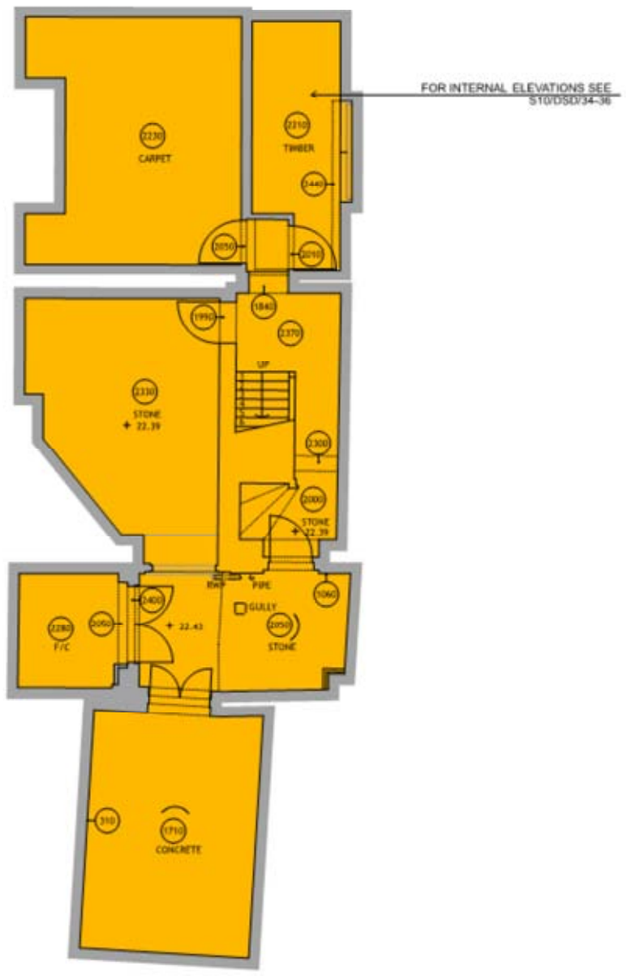



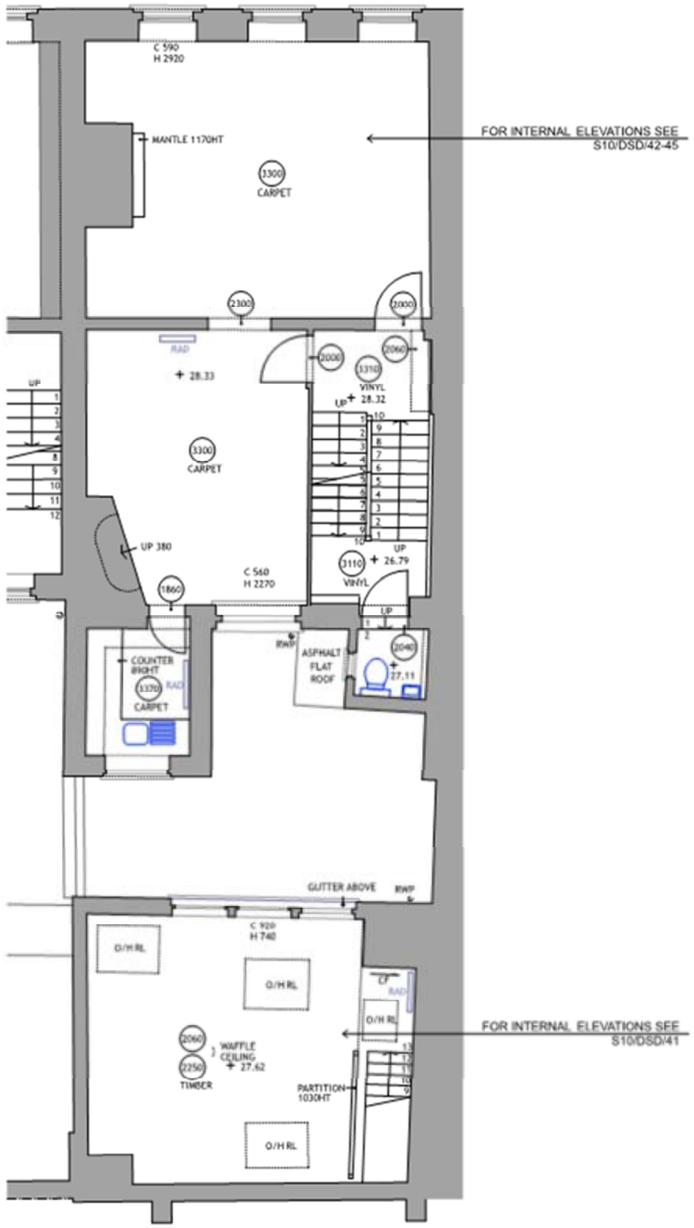
1 No6 DENMARK STREET
EXISTING EXTERNAL FRONT ELEVATION

2 No6 DENMARK STREET
EXISTING EXTERNAL BACK ELEVATION

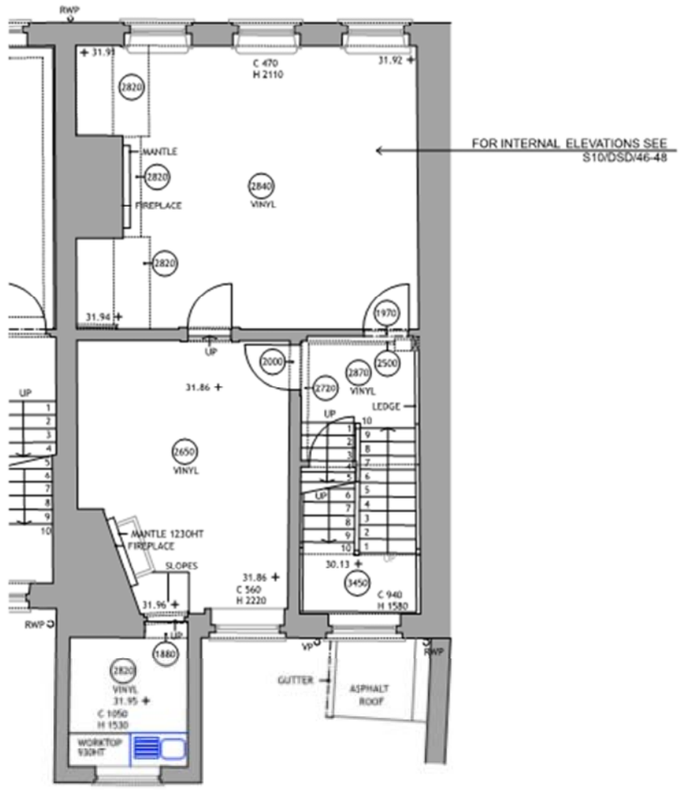


5 No6 DENMARK STREET
EXISTING BASEMENT PLANS

6 No6 DENMARK STREET
EXISTING GROUND FLOOR PLANS



7 No6 DENMARK STREET
EXISTING FIRST FLOOR PLANS



8 No6 DENMARK STREET
EXISTING SECOND FLOOR PLANS