
36 Great James Street
London
WC1N 3HB

Structural Report

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1.0 Introduction

- 1.1 This report has been prepared at the request of the owner of the property following instruction on 15th October 2015. This report was produced solely for the benefit of the owner and no liability is accepted for reliance placed on it by any other party.
- 1.2 The purpose of the report is to comment on the structural integrity of the building and identify potential structural defects in the building fabric. In particular, commenting on the significance of the undulating floors throughout the building and the proposed strengthening work that could be adopted to enhance the building's robustness.
- 1.3 The report is based on a visual inspection and minor opening-up works carried out to investigate the existing floor structure.
- 1.4 Because of the limited nature of this assessment, all comments and recommendations must be regarded as of a preliminary nature only. This report is limited to those aspects of the site specifically reported upon and no liability is accepted for any other aspect.

2.0 Existing Building

- 2.1 The property was visited on Tuesday 15th December 2015 by Sam Stacey (MEng) of Elliott Wood Partnership.
- 2.2 The site is located on the western side of Great James Street, Central London. The property sits within the London Borough of Camden and the Bloomsbury Conservation Area.
- 2.3 No.36 Great James Street is a 5 storey Georgian terraced property with a grade II * status. The layout is typical of the period with the hallway and stair to the south side of the property and the front and rear rooms to the north. The upper storeys have a principal room to the front of the property, with the smaller rooms to the rear adjacent to the staircase. A closet wing extends up to the third floor. At the rear of the site there is a two storey rear extension at ground floor level with a glazed link between the main house and extension. At lower ground level there are brick vaults located beneath the pavement at the front of the property and also at the rear of the property below the rear extension.
- 2.4 The property is constructed with load bearing masonry walls, timber floors and timber panelled partitions at each floor level. Local opening-up works carried out at each floor level has allowed us to determine the direction of spanning joists and the likely layout of the timber beams. The dimensions and condition of the timber joists and beams in the location of the opening-up works were also recorded.

3.0 Observations

- 3.0 A significant unevenness to the floor was noticed at each floor level to the main building. Each floor followed a similar pattern with the centre of the floor having a distinct low point, with the floor rising as it reaches the external walls.
- 3.1 The main staircase and balustrade was also noted to have a clear inclination running perpendicular to the direction of the tread, with the lowest point towards the middle of the building.
- 3.2 In general the opening up works found the timber joist and beams to be in fair condition considering the age of the building. Some deterioration of timber was noted at the connections of the timber beams.
- 3.3 The timber joists appeared to span side-to-side between the party walls throughout. The joists are supported by large timber beams with the primary beams to the front and rear spanning front to back and a secondary beam spanning between the party walls under the central spine wall. A structural mark-up for a typical floor has been appended to this report.
- 3.4 The floor build-up at each level above ground level consisted of timber boards supported on the top face of the joists with a lath and plaster ceiling supported off the bottom face. On the second and third level there was evidence that attempts to level the floor had been made using plywood packers and ply board on top of the original floor boards.

4.0 Proposed Alterations

- 4.0 The main structural works to the refurbishment involves the re-building of the rear annex building and glazed link. It will be formed from either load-bearing timber infill or lightweight block wall with a stability frame to trim the opening.
- 4.1 The refurbishment to the main house requires minimal structural alterations. The main focus will be to rectify the issue with the undulating floors. It is understood that the main building and rear annex will be retained as a single dwelling residence.
- 4.2 To further understand the causation of the undulating floors an analysis has been carried out on the floor structure. Typical floor loads for a residential building of this type and the measurements recorded during the opening up works were used for the analysis. The timber strength grade has been conservatively assumed as low timber strength grade (C16).

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- 4.3 On the basis as outlined above the timber floor joists were found to be within the permissible stress limits and deflection limits. However the primary and secondary beams were found to be theoretically overstressed and their deflections above what is usually recommended for a brittle plaster finish. It is likely that the undulation to the floors have been caused by the cumulative deflection and long term creep of the joists and timber beams over the years.
- 4.4 To ensure that the stresses and deflections are kept within acceptable limits and to improve the overall robustness of the floor structure we suggest that the existing timber beams are stiffened accordingly.
- 4.5 We would recommend that a flat steel flitch plate is installed to each of the primary beams. Either recessed into the centreline of the beam and bolted through or two plates on each side and bolted through. We also propose that where necessary the existing connection between the large timber beams are strengthened using a pair of angles bolted through. The recommended strengthening details have been appended within this statement. The suggested strengthening approach is considered to be less intrusive than other methods as it retains most of existing structure.
- 4.6 Re-levelling of the floors will be achieved by using timber firings or doubling up the existing joists with the new joist set slightly higher than the original joists.
- 4.7 We recommended that a full timber survey is carried out by a specialist to confirm if there is any insect infestation or timber rot within the building. It will also examine the overall condition of the existing timber throughout the building. The condition of the joists and timber beams, in the location of the opening-up work, seemed to be in fair condition for the age and type
- 4.8 A newel post will be installed at lower ground floor level to provide further support to the existing staircase.

5.0 Conclusion

5.1 Our site visit and local opening-up have enabled us to review the existing structural arrangement of the floors and allowed us to comment on their condition. We have carried out an analysis of the floor structure and we recommend that some local strengthening is carried out to the primary timber floor beams.

5.2 With local strengthening of the floors the structural integrity of no.36 Great James Street would be greatly improved. We would work closely with the design team and Heritage Officer to develop the details for repair in a careful and sympathetic manner. We would also review the contractor's method statements in due course and expect them to have given careful consideration to any temporary works necessary to carry out the works in a safe manner.

Appendix 1 – Typical Floor Structure – S.01

This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.

Do not scale from this drawing.

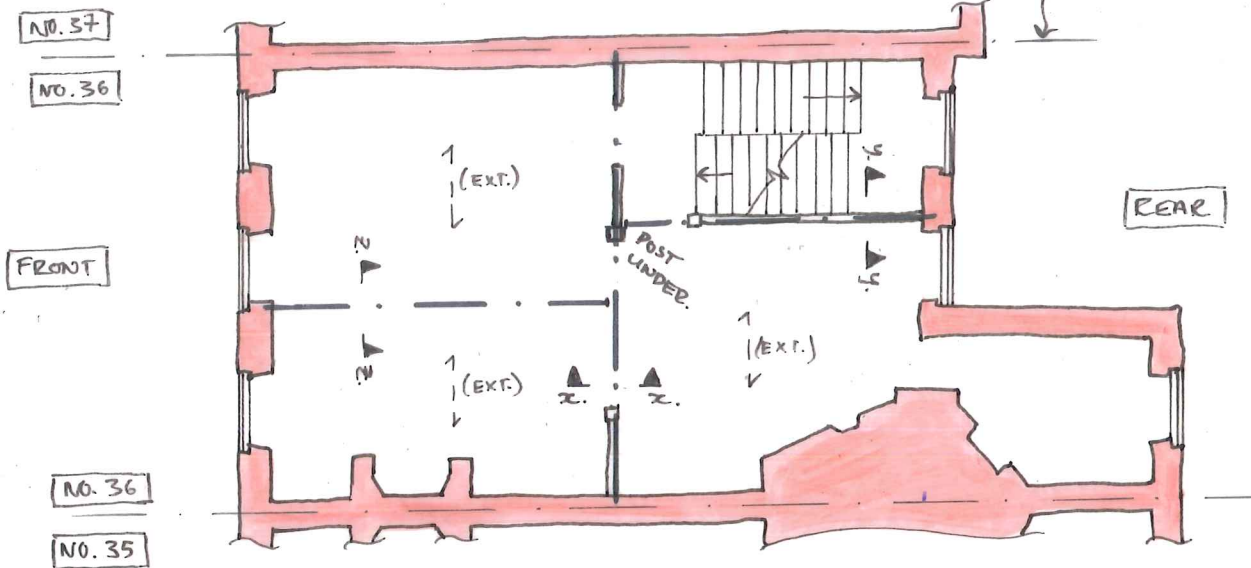
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LEGEND:

1 (EXT.) - EXISTING TIMBER JOISTS
TYPICAL 200mm dp x 60mm
@ 400mm c/c.

--- - EXISTING TIMBER BEAM.
300mm x 200mm dp.
(REFER TO DRG S.20 & S.21
STRENGTHENING DETAILS.)

ASSUMED PARTY WALL
LINE.



**EXISTING FIRST FLOOR
MAIN BUILDING - TYPICAL.**

NOTES:

- 1) JOIST & BEAM SIZES BASED ON MEASUREMENTS RECORDED FROM LOCAL OPENING-UP WORKS - ASSUMED TO BE SIMILAR THROUGHOUT. TBC AFTER STRIP OUT/FURTHER OPENING-UP WORKS.
- 2) SUITABILITY & DEVELOPMENT OF STRENGTHENING OPTIONS TBC AFTER FULL TIMBER SURVEY (By SPECIALIST) & INITIAL STRIP OUT / FURTHER OPENING-UP WORKS. REFER TO EW DRG S.20 & S.21 FOR STRENGTHENING DETAILS.

drawing title
TYPICAL FLOOR LAYOUT

scale(s) date drawn
~1:100@A4 DEC'15 SST

drawing status
PRELIMINARY

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job title
**36 GREAT JAMES STREET, LONDON
W61N 3HB**

job no 2150693	drawing no S.01	revision P1
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Appendix 2 – Strengthening Details – S.20-21

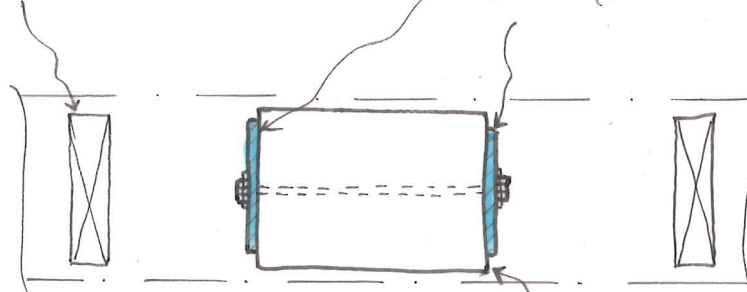
This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.

Do not scale from this drawing.

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EXISTING TIMBER JOISTS RUNNING PARALLEL TO PRIMARY BEAM.

2 NO. 15mm THK x 175mm Dp STEEL FLITCH PLATE BOLTED TO EXISTING TIMBER BEAM USING M12 BOLTS @ 400mm c/c.



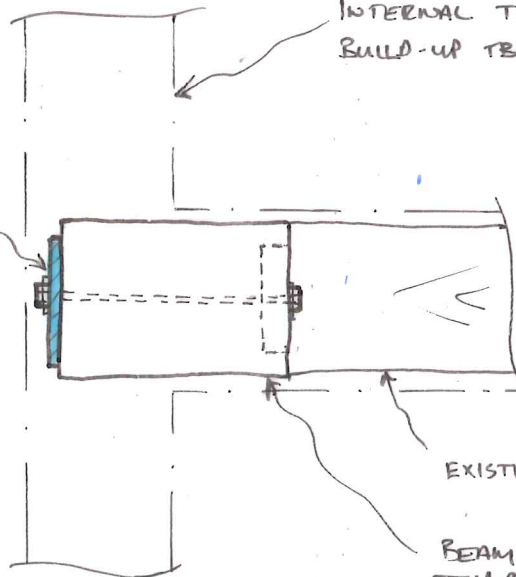
FLITCH PLATE DETAIL.
(X-X.)

BEAMS TO BE PROPPED IN TEMPORARY CASE.

15mm THK x 175mm Dp FLITCH PLATE BOLTED TO TIMBER BEAM USING M12 BOLTS @ 400mm c/c.

INTERNAL TIMBER PARTITION BUILD-UP TEL.

STAIR VOID.



EXISTING TIMBER JOISTS

BEAM TO BE PROPPED IN TEMPORARY CASE.

FLITCH PLATE DETAIL.
(Y-Y.)

drawing title

STRENGTHENING DETAILS.

scale(s) date drawn

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drawing status

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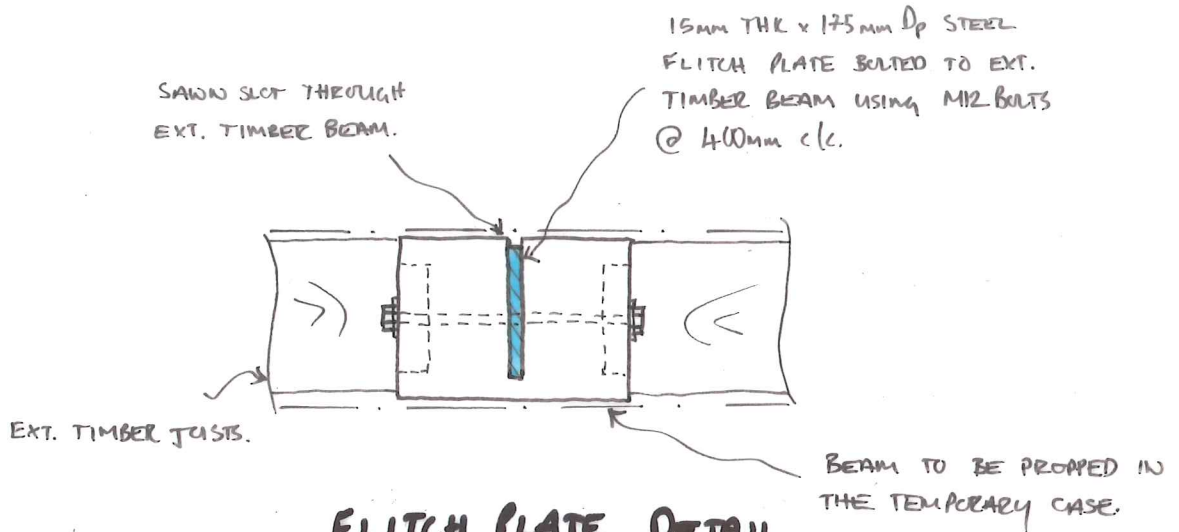
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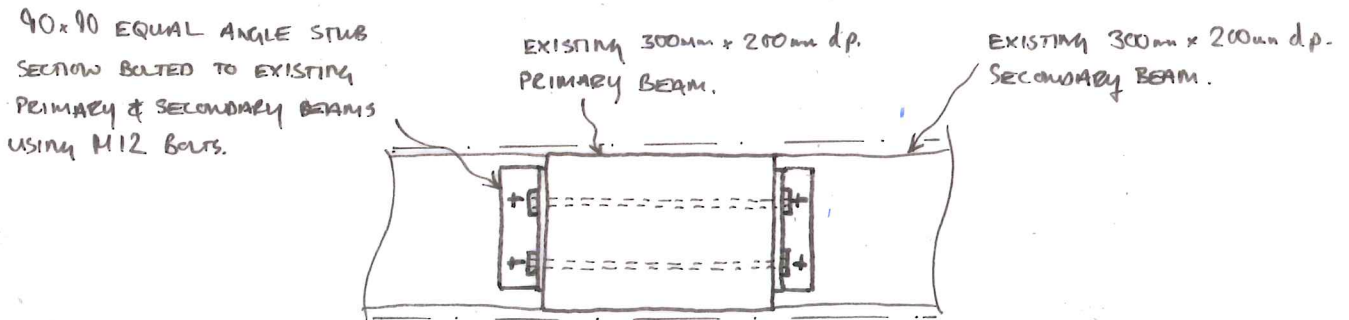
This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.

Do not scale from this drawing.

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FLITCH PLATE DETAIL.
(2-2)



TIMBER BEAM CONNECTION
DETAIL.

drawing title

**STRENGTHENING
DETAILS.**

scale(s) date drawn
~1:10@A4 DEC'15 SST

drawing status

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**36 GREAT JAMES
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WC1N 3HB

job no	drawing no	revision
2150693	S.22	P1

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