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Structural Proposals to infill existing Door openings

at

42 Bedford Square

Date: **2nd October 2019** **Revision 3**

Project Ref: 3306/5463

Contents

General

The number 42 Bedford Square property has undergone significant renovations over past years. The known significant renovations were

- Alteration to publishing house offices, when it is suspected that the original floors were removed.
- After sale by publishing house, conversion to low quality residential by then owner which was never completed but destroyed a lot of features.
- Conversion and general upgrading by Contractor “Beck Interiors” on behalf of present owners over the last two years.

These works, in the last two years, have been carried out by a builder experienced in this type of work, however, it now transpires that some of the new door openings were not agreed with English Heritage and it is proposed to revert back to the former door arrangements or as agreed with English Heritage. The former door arrangements, and the existing have been set out by the Architects BDP and these are shown on their drawings attached within the appendix A.

This report sets out to outline the structural scope of work involved in each opening should they be altered from the arrangement. There are 5 door openings to be considered. We suggest alterations which will result in less interference with the present building structure. Full Engineering drawings can be prepared later were necessary on receipt of the general agreement of English Heritage and the Architects.

This report follows the same numbering system as per the BDP drawings.

Copies or relevant BDP drawings are in	Appendix 1
Photographs taken April and May 2019 are in	Appendix 2
Structural Drawing of Door 3 by Walsh Goodfellow is in	Appendix 3
Photographs taken September 2019	Appendix 4

1. Opening No.1

Read with BDP drawing No. 22AD001MH / See Photographs No.331 & 333 in appendices A and B

1.1 Our examination of the BDP drawings and our examination on site lead us to believe that it will not present major structural problems adopting the door arrangements as set out on the BDP drawing. The BDP drawings show the new door will be contained within the current opening.

1.2 As part of the previous renovations a flitch beam comprising 219mm x 72mm outer timbers and a center steel plate of 219mm x 12mm was installed. Please refer to photograph 333 which shows the existing opening and photograph 331 which shows a detail of the flitch beam arrangement.

The present flitch beam will be more than structurally adequate to transfer the loads onto the adjacent framing stud work.

1.3 We recommend that the existing flitch beam arrangement remains in place and that the new side and top panels are built of structural timber. We suggest that the studs should be 169mm x 47mm at 400mm centers with 169mm x 47mm noggins at 600mm centers. The door side studs should be 72mm thick by 169mm to provide a robust fixing for future doors.

2. Opening No.2

Read with BDP drawing No. AD002 and Photographs No.328 & 336

2.1. Present Situation is that door opening No.2 was previously enlarged and the enlarged opening was reinforced with twin 152 x 152 x 30kgs per metre UC sections all around. This has resulted in twin stanchions and twin lintel beams which form a portal goal post arrangement. This work was well done and has created a robustly supported opening. See photograph No 328 and 336 which show the steel sections.

2.2. It is our proposal that the new door will be moved marginally in such a way that the existing steel stanchions can remain in place, our measurement of the drawings show that this movement will be approximately 50 – 75mm. The retention of the existing steelwork will result in no major temporary works and will not put the building at risk. The removal of the now installed steel will require major temporary works and will in our opinion put the building through unnecessary risk.

2.3. There also exists a large timber post which is approximately 300mm x 300mm (see photograph No. 336) and this extends for the full height from floor to ceiling at this level. At present, we do not fully understand its structural purpose, however we are in no doubt that the original constructors of this building would not have inserted such a timber member had it not had a structural reason to be there. We strongly advise that this timber should not be moved or in any way interfered with.

2.4. We strongly recommend that the goal posts of twin 152 x 152 x 30kgs per metre remain in position and that the door is moved 50 – 75mm to the left (the left when standing in the hall, see BDP drawing No.002) this will avoid any future risk to the building. We further recommend that infills are carried out using 294mm x 47mm studs and 294mm x 47mm noggins at 600mm centers. We suggest that ply liner boards be placed around the existing steel goal posts off 25mm x 294mm and these ply sheets are screwed to the UC sections using 8mm self-tapping screws in pairs at 400 centers all around this opening. This will ensure a robust fixing for any new studwork and will ensure a structurally robust fixing for all future doors.

2.5 We recommend that the lintels over the new door be 145mm deep x 72mm x 4 number so that the full wall thickness is supported.

3. Door Opening No.3

See BDP drawing No. 003 / See Photographs No.337 & 338

3.1. This door is within the stair core. Prior to investigation works we expected this door to have Georgian brick masonry each side an over the door. Our investigation reveals that this door surround appears to have been altered significantly in the historic past, as we found (left and right sides assumes one is standing in the stair well).

- Loose Georgian brick masonry on the right side (assumes standing on stair landing) which has been trimmed with 3 side timbers of 47mmx219mm which support a 203x203 UC over door lintel, which has only 100mm bearing on the brickwork. See photograph 349. Please note the left side structure was exposed later and in shown of other photographs.

- Directly over the 203x203 UC lintel there is an original 120mmx225mm wide timber beam. This appears to be a form of ring beam. This appears to be in good condition.

- To the left side of the present opening there is a combination of brick masonry supported on a timber beam, which is in turn supported on a timer post. This was not expected but is of considerable age as illustrated by the very dark colour of the timber. During the work in the last 2 years the 203x203 UC was supported on an existing timber post and 2 new posts of size 72mmx219mm. With a new timber bearer under the recently installed UC. The brick and general timber arrangement are shown on photograph number 355 and 354. Please note the brick under the high-level timber beam and a further timber 700mm below. Below this low-level beam there is a timber post.

The above is illustrated on our drawing in Appendix 3 (please note a full-size A1 paper copy or electronic copy is available on request)

3.2. Our proposal is to infill the righthand side with new 225mm brickwork which will be toothed into the existing Georgian brick. We propose to leave the existing 203 UC in place as to remove this will be dangerous and of little benefit. The steel beam lintel removal, will require significant temporary works and bearing in mind the loose nature of the existing brick work this would present a significant risk to builders and indeed the building should it be removed.

3.3. We recommend that the space over the door up to the lintel soffit is infilled with 219x 47 studs and noggins. We also recommend that a 150mmx 219mm is installed to ensure no cracks will occur at the junction of the UC and the studwork. Filling this space with masonry will require the lintel to be bolted to the existing timber post which an undesirable arrangement.

3.4 The left side presents the greatest difficulty as the new 72mmx219mm side studs must be removed to accommodate the architects wishes. Firstly, we ask if it would be possible to leave the recently inserted posts in position as their removal presents a lot of structural difficulties. This would result in the new door being moved 100mm to the right (standing in stair core).

We understand that this is not acceptable and the present site timbers must be removed.

3.5 We have on the attached drawing 5489-4001 shown the necessary details to achieve the removal of side studs.

4. Door Opening No.4

See BDP drawing No. AD004 and See Photographs No. 339 and 340

4.1. The work carried out by the previous contractor is robust and is of sufficient structural strength to support the wall over. Removal of the present steelwork would present considerable risk to the building as major temporary works would be required.

The form of temporary works will be needles to support each stud. This at the best of times is a precarious process and we feel this would put the building to an unnecessary risk. Retention of the existing structure is we feel the appropriate action. See Photograph No.282 taken 23rd September 2019 in Appendix 4.

5. Opening No.5

See BDP drawing No. AD005 / See Photographs No. 350

5.1. This is a door that leads to a former cupboard which has now been converted into a service duct. The present proposal is to move this opening approximately 50 to 75mm to the right (when standing in the main room facing the door).

5.2. We proposed to move the door 50 – 75mm and the resulting infill is infilled with studs and noggins of 120mm x 47mm with 120mm deep x 97mm timber lintels, studs are to be at 400 centers and noggins at 600 centers.

5.3. We recommend that the door be moved marginally to avoid unnecessary disruption to the structure of the building.

6. Overall Conclusion

6.1 In our proposals outlined above we have tried to act in a structurally sensitive manner to avoid unnecessary distress to this amazing building.

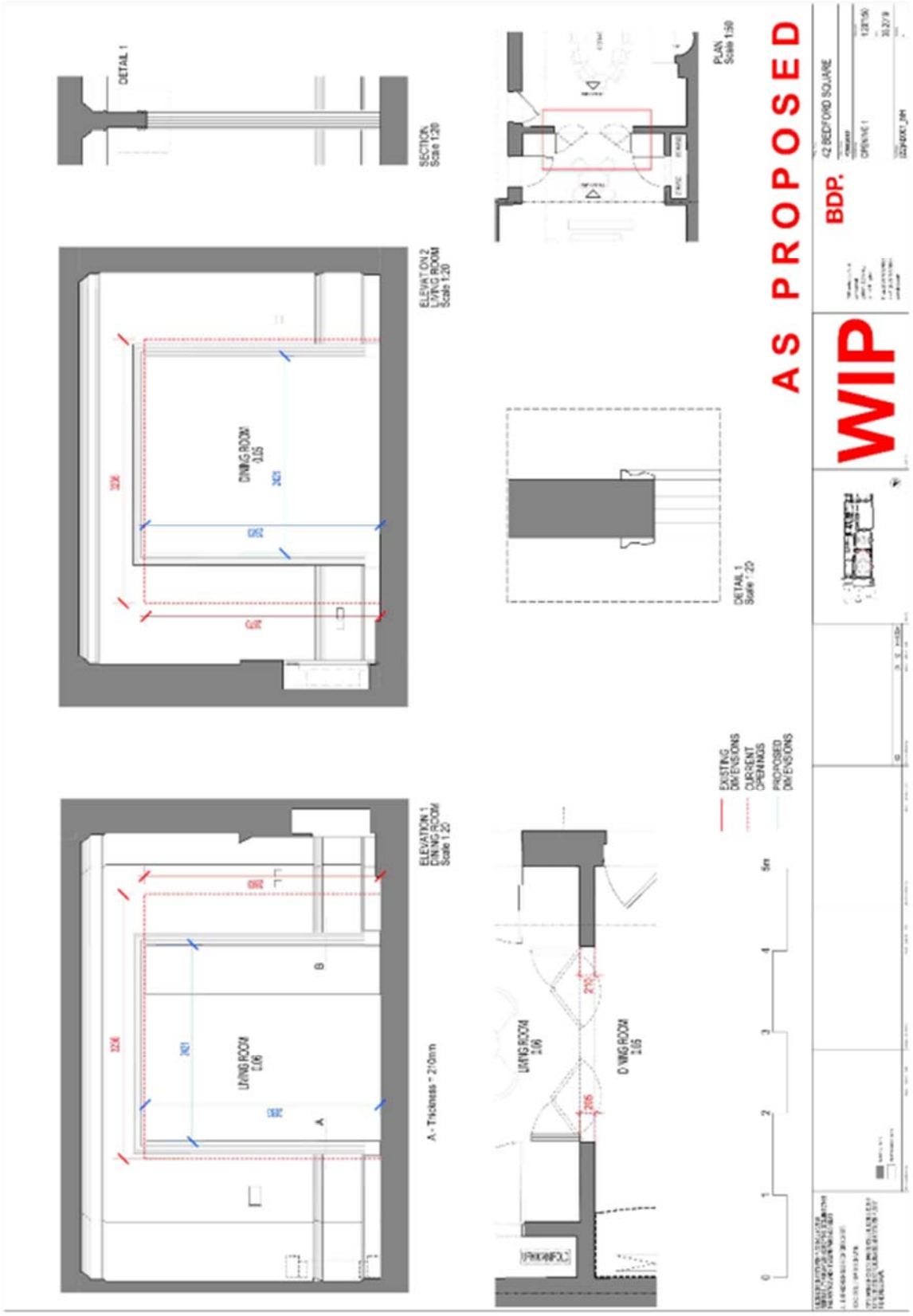
We would be grateful to have the opportunity to discuss these should that be felt necessary.

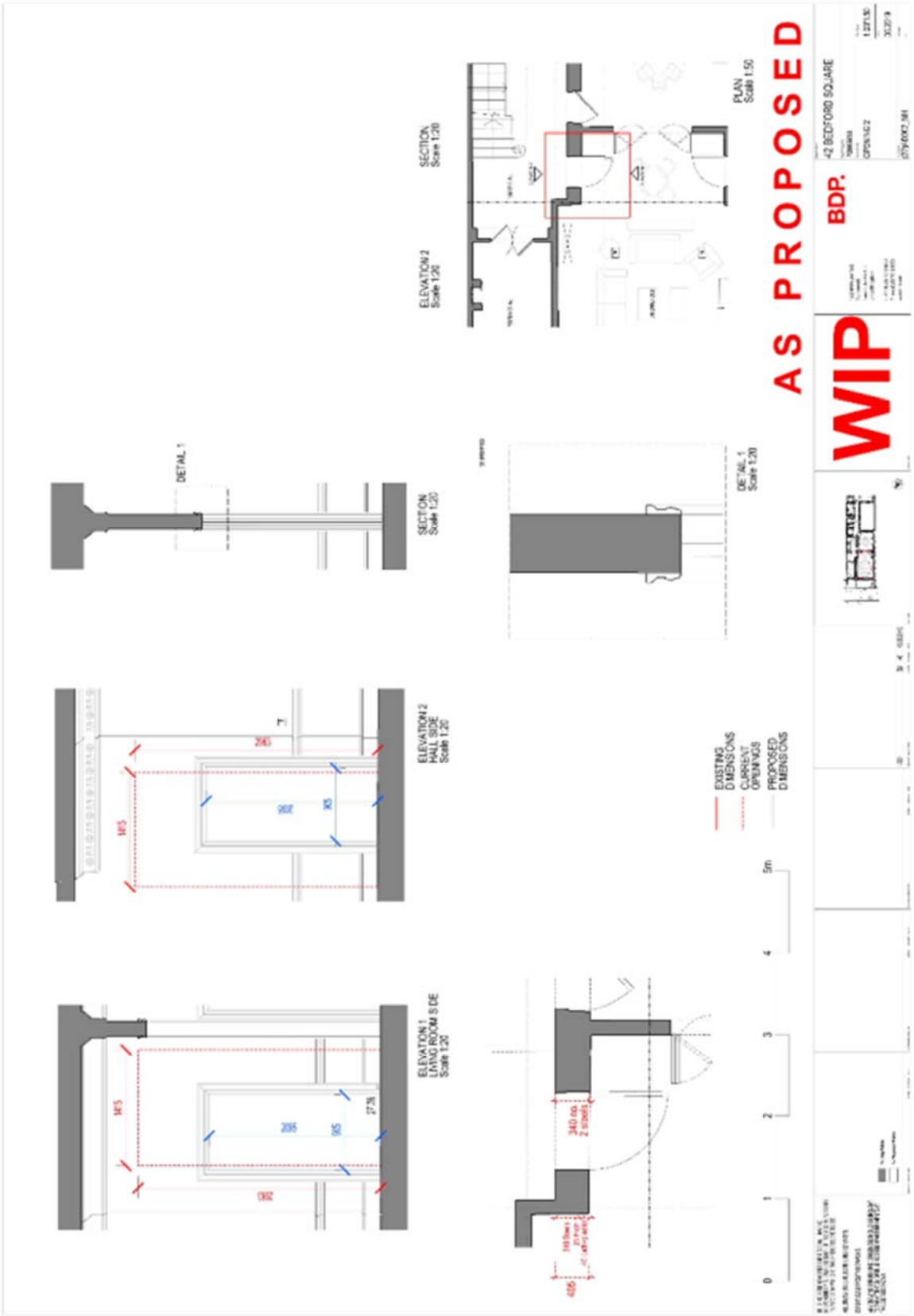
Signed: -

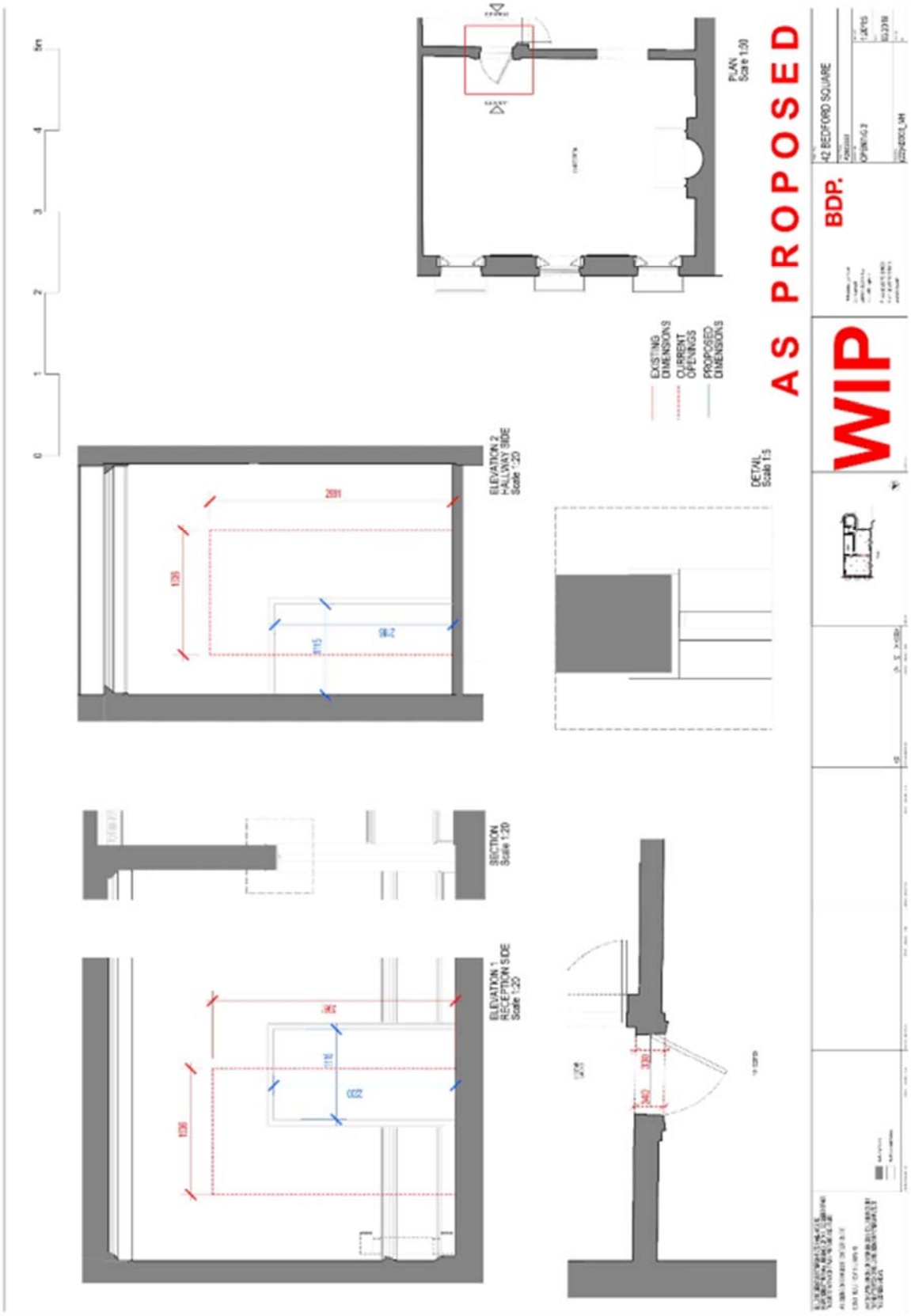
Stephen P Walsh **BE CEng FIEI MIStructE FICE**
Director

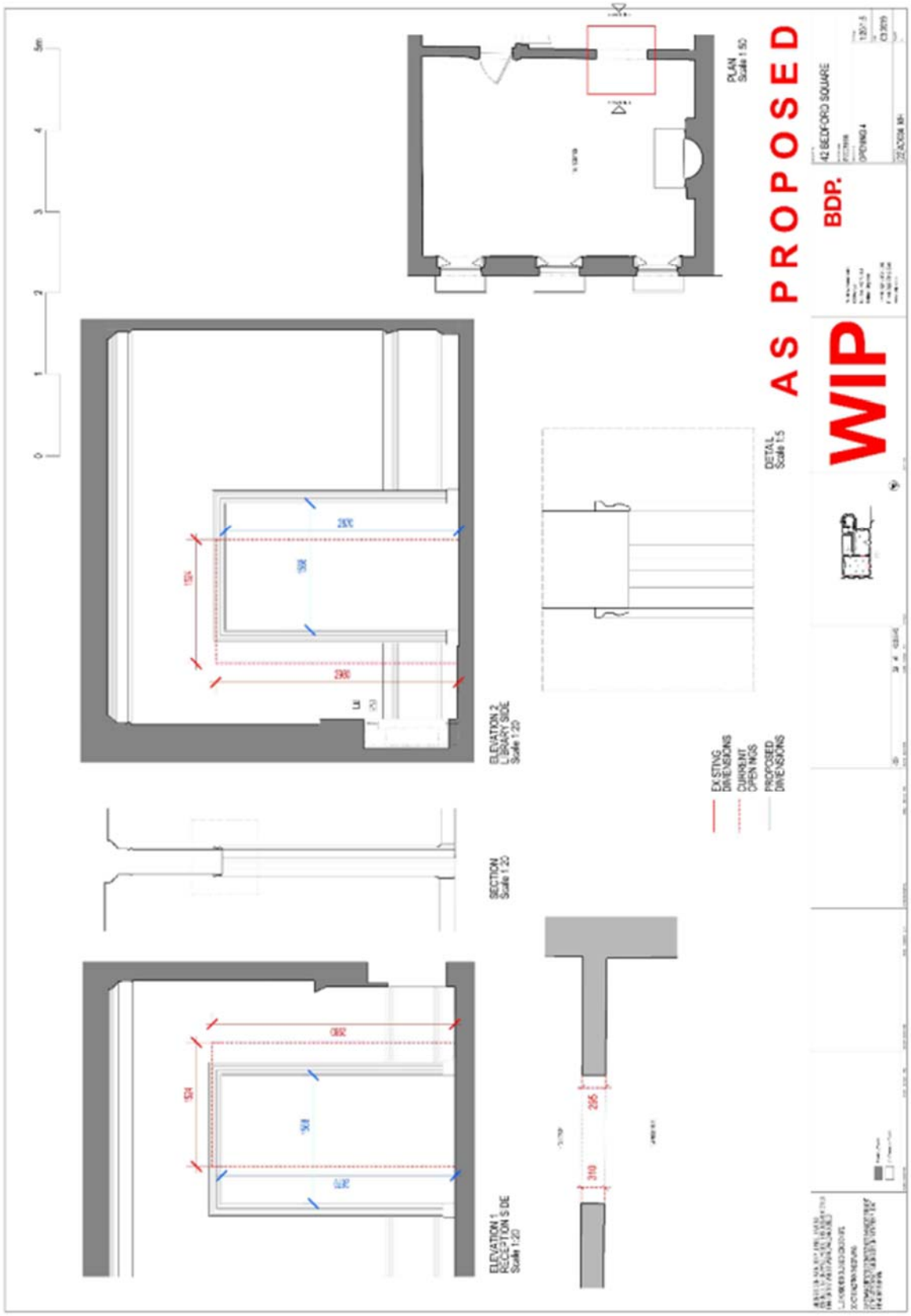
Date: - 25th September 2019

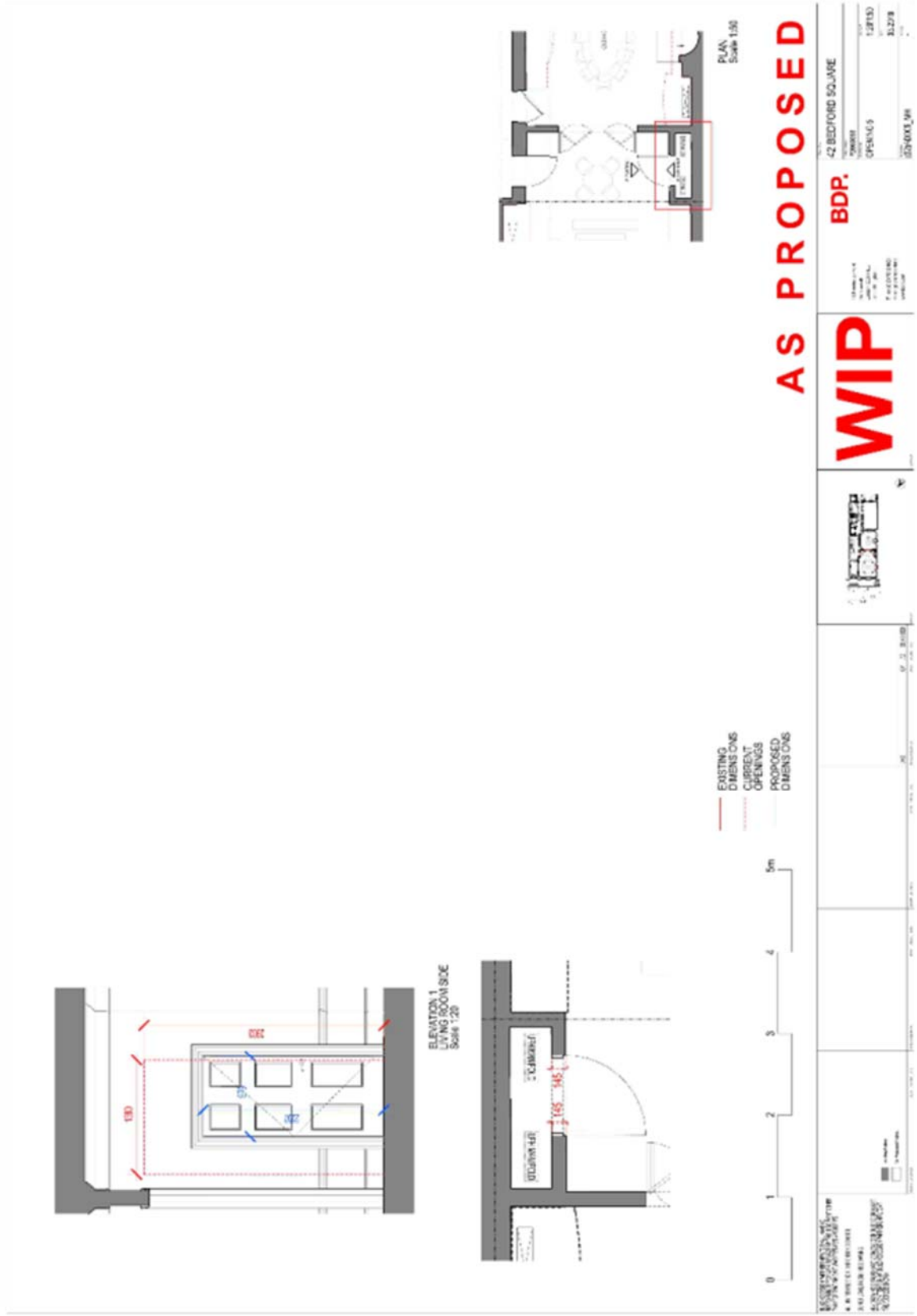
APPENDIX 1 – DRAWINGS BY BDP

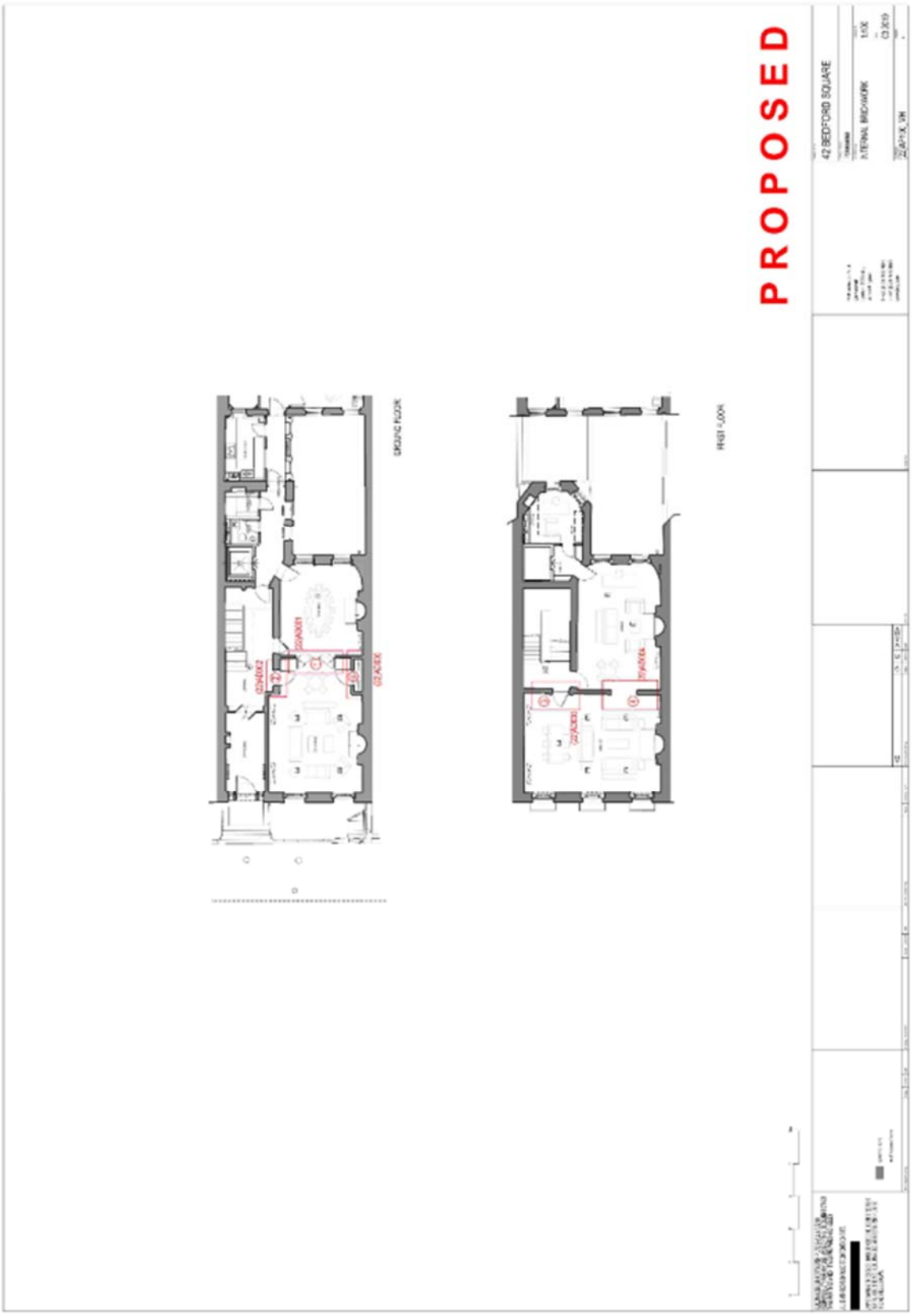

AS PROPOSED
WIP
BDP.
42 BEDFORD SQUARE
DETAIL 1
SECTION
Scale 1:20
PLAN
Scale 1:50
ELEVATION 2
LIVING ROOM
Scale 1:20
DINING ROOM
LIVING ROOM
DETAIL 1
Scale 1:20
ELEVATION 1
DINING ROOM
Scale 1:20
A - Thickness = 210mm
EXISTING DIMENSIONS
CURRENT OPENINGS
PROPOSED DIMENSIONS
5m


AS PROPOSED
WIP
BDP.
42 BEDFORD SQUARE
PLAN
Scale 1:50
SECTION
Scale 1:20
ELEVATION 2
Scale 1:20
DETAIL 1
Scale 1:20
SECTION
Scale 1:20
DETAIL 1
ELEVATION 2
HALL SIDE
Scale 1:20
ELEVATION 1
LIVING ROOM SIDE
Scale 1:20
EXISTING
DIMENSIONS
CURRENT
OPENINGS
PROPOSED
DIMENSIONS
0
1
2
3
4
5m


AS PROPOSED
WIP
BDP.
42 BEDFORD SQUARE
PLAN
Scale 1:50
EXISTING DIMENSIONS
CURRENT OPENINGS
PROPOSED DIMENSIONS
ELEVATION 2
HALLWAY SIDE
Scale 1:20
DETAIL
Scale 1:5
SECTION
Scale 1:20
ELEVATION 1
RECEPTION SIDE
Scale 1:20


AS PROPOSED
WIP
BDP.
42 BEDFORD SQUARE
PLAN
Scale 1:50
DETAIL
Scale 1:5
ELEVATION 2
LIBRARY SIDE
Scale 1:20
SECTION
Scale 1:20
ELEVATION 1
RECEPTION SIDE
Scale 1:20
EXISTING DIMENSIONS
CURRENT OPENINGS
PROPOSED DIMENSIONS


AS PROPOSED
WIP
BDP.
42 BEDFORD SQUARE
PLAN
Scale 1:50
EXISTING DIMENSIONS
CURRENT OPENINGS
PROPOSED DIMENSIONS
ELEVATION 1
LIVING ROOM SIDE
Scale 1:20
0
1
2
3
4
5m


PROPOSED
42 BEDFORD SQUARE

APPENDIX 2 – PHOTOGRAPHS

Taken April and May 2019

PHOTOGRAPH No. 331

PHOTOGRAPH No. 333

PHOTOGRAPH No. 328

PHOTOGRAPH No. 336

PHOTOGRAPH No. 337

PHOTOGRAPH 349

PHOTOGRAPH 354

PHOTOGRAPH 355

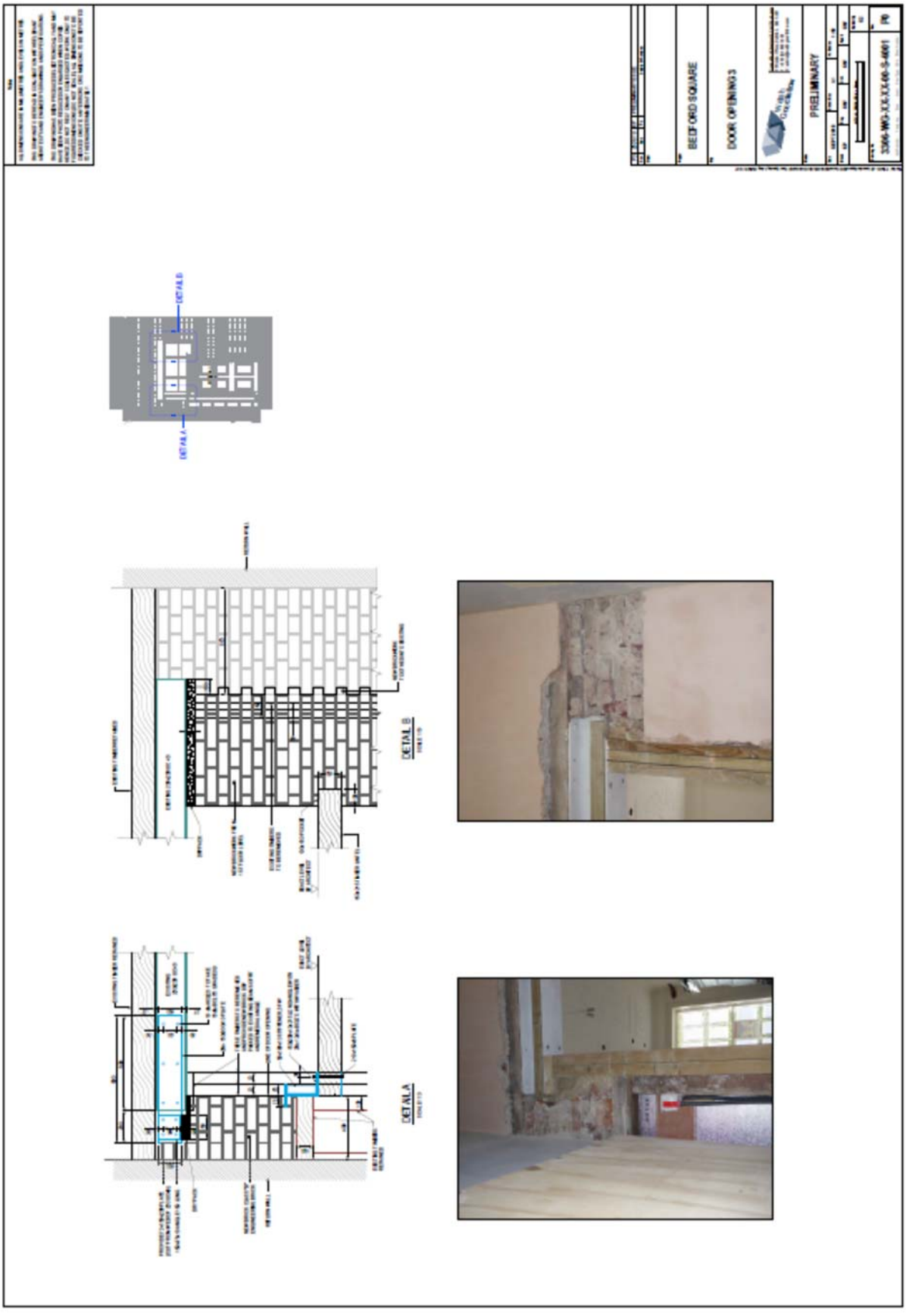
PHOTOGRAPH 339

PHOTOGRAPH 340

PHOTOGRAPH 350

APPENDIX 3 – DRAWING OF DOOR 3

Note: This drawing is full A1 size and is available electronically or in full size paper copy on request from Walsh Goodfellow


BEDFORD SQUARE
DOOR OPENING 3
PRELIMINARY
DETAIL B
DETAIL A

APPENDIX 4 – PHOTOGRAPHS

Taken 23rd September 2019

PHOTOGRAPH No. 282 – Door Opening No. 4

PHOTOGRAPH No. 283 - Door Opening No. 3 Left Side

PHOTOGRAPH No. 284 - Door Opening No. 3 Right Side