

Commencing Repair Works

The Spine Wall

Working in conjunction with Mann Williams (Structural Engineers) & Davies Sutton Architects an approach was prepared to repair the Spine Wall, shown below. This approach was based on a visual inspection and the hope to save as much historic fabric as possible. This was submitted as a Listed Building Consent Application. From the beginning, it has been IHRLs intention to save what we are safely able to. The true state of the Spine wall was unknown. It was quite clear that all the timber lintels were unsalvageable. It was decided by all parties to conduct further inspections of the wall. IHRL setup safe working platforms and exclusion zones to inspect the wall from above.

Island House Lougharne
Spine Wall Condition and Approach to Repair

Mann Williams Consulting Civil and Structural Engineers
53 Mount Stuart Square, Cardiff, CF10 5LR T 02920 480333

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Spine Wall Condition and Approach to Repair

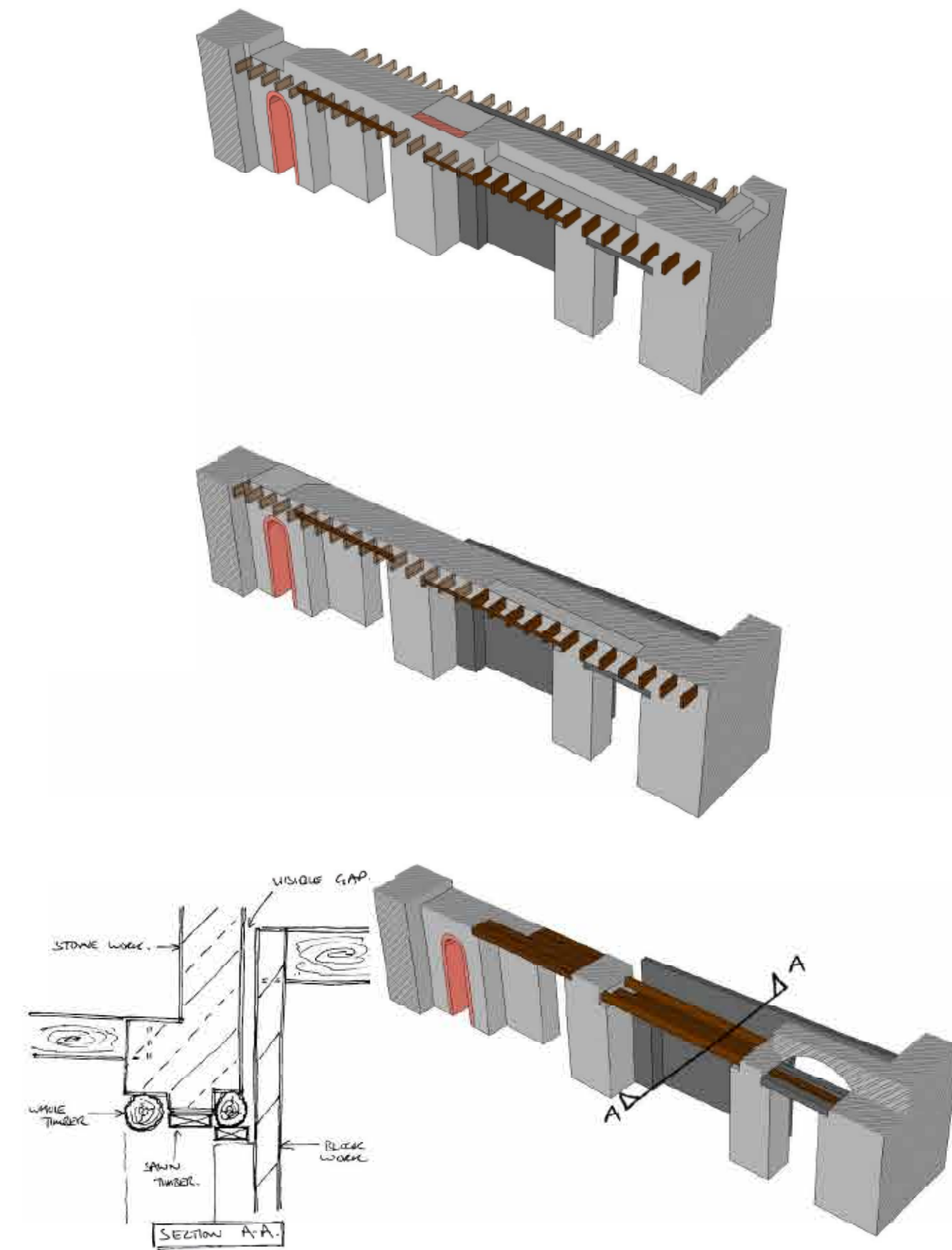
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Above sections show the spine wall condition as of 09.06.2020

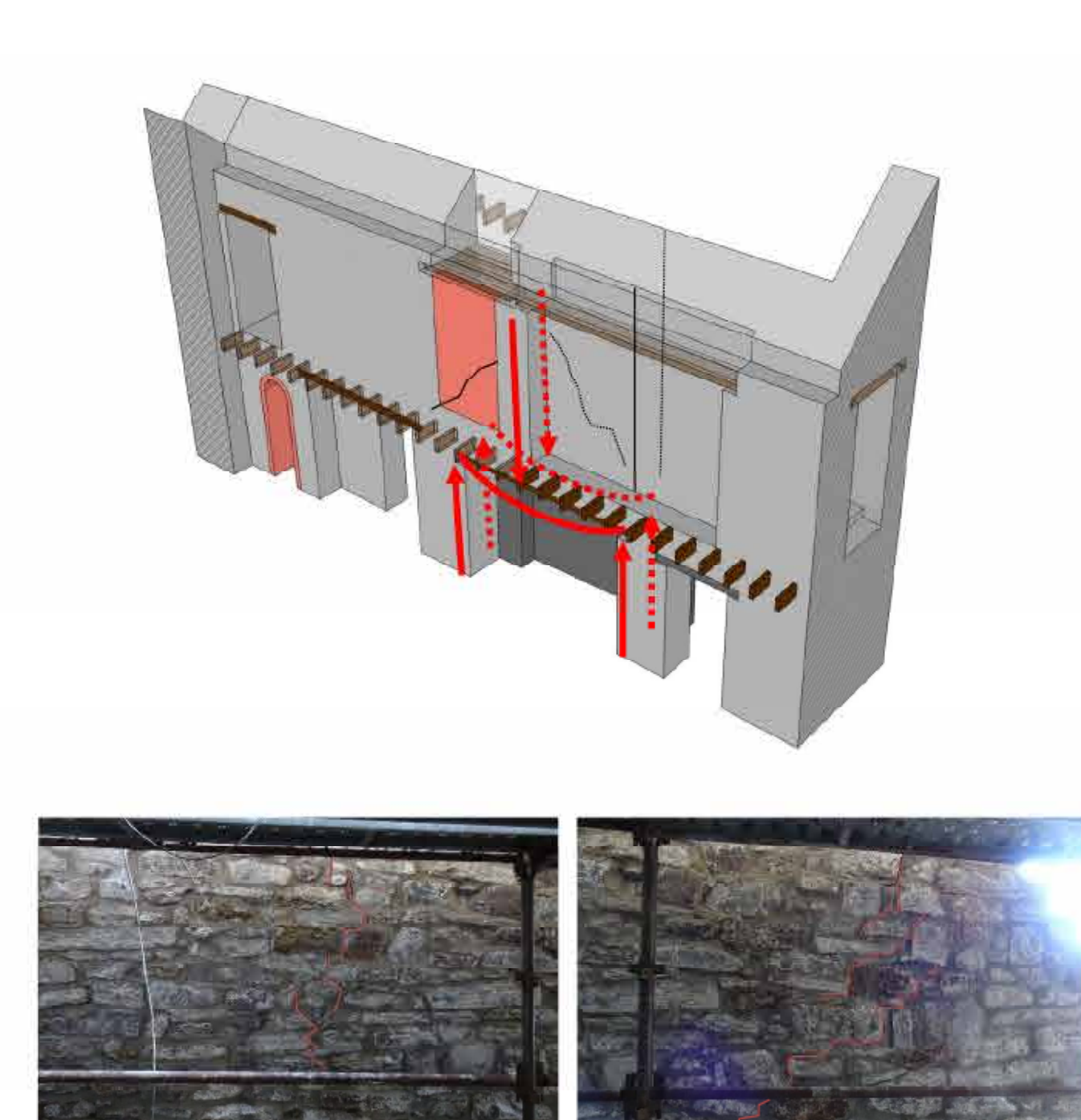
- 3.8 The first-floor masonry panel between the western most opening and central bricked-up opening appears to be in sound condition. There is no clear evidence of movement in the form of cracking of finishes or otherwise.
- 3.9 This is likely due to the masonry being monolithic above the entire opening, meaning a secondary load path in the form of an arch could develop as the lintel degraded. Indicative load paths are marked up on the image below.



South Elevation, First Floor (09.06.2020)

South Elevation, First Floor (01.07.2020)

- 3.11 The central section of first-floor masonry (central bricked-up opening to the mid-point of the recess in the southern elevation) is in worse condition. Both the finishes and masonry itself exhibit cracks indicative of movement due to failure of the lintels beneath.
- 3.12 In this location the first-floor masonry is not monolithic over the ground floor opening below, it is broken by the central opening. In this arrangement the arching secondary load path does not have the opportunity to develop and all the load must be taken by the lintel. As such, as the lintel has degraded the masonry has moved enough to cause cracking.
- 3.13 Indicative load paths and crack locations are shown on the image below.

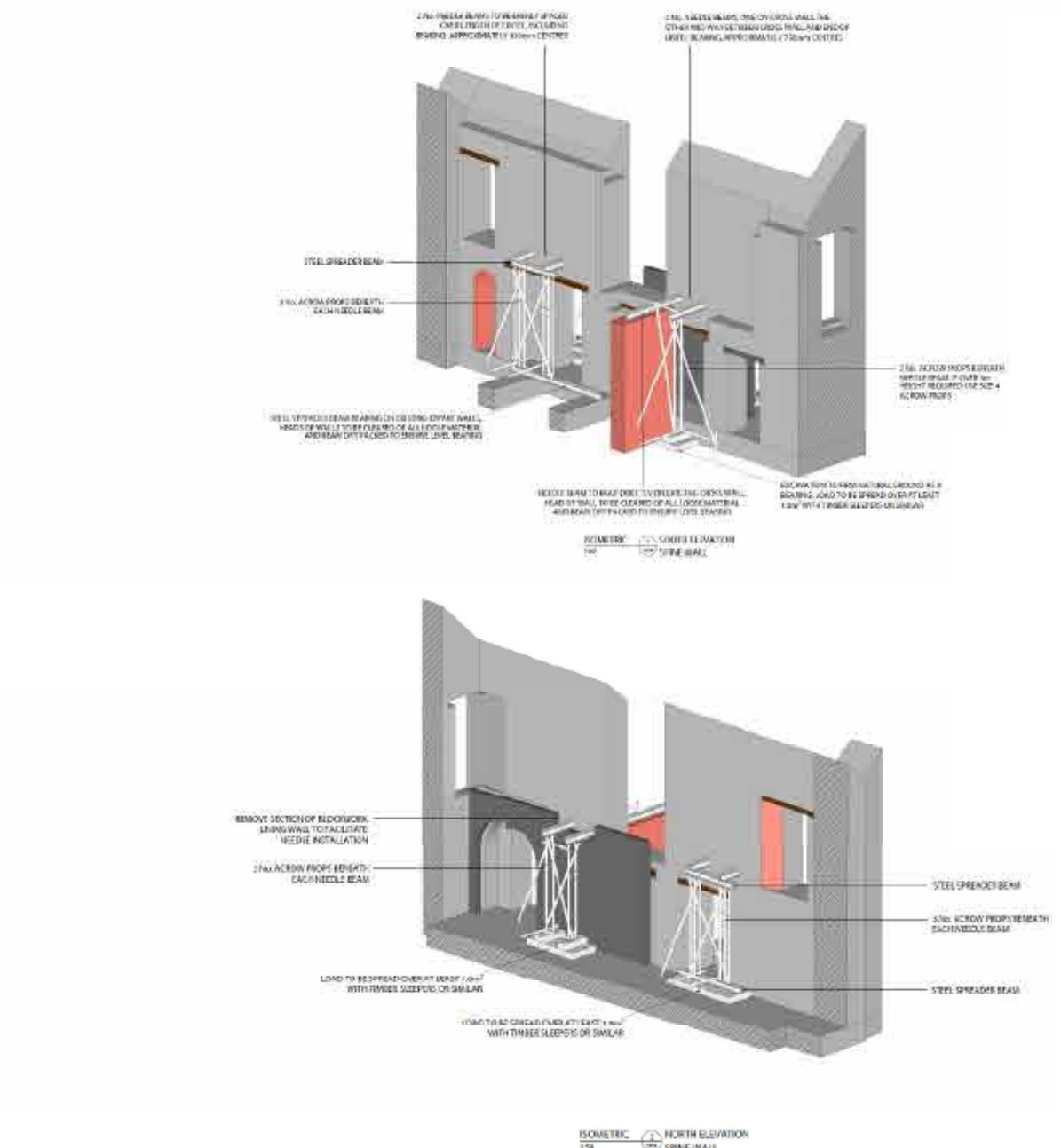


Cracks in North Elevation, First Floor

Cracks in North Elevation, First Floor

4.0 Approach to Repair

- 4.1 Following the clearance of the loose and severely damaged masonry the remainder of the spine wall is to be repaired in situ.
- 4.2 This involves the replacement of decayed timber lintels and the stitching of cracks due to movement in the masonry caused by the decayed lintels.
- 4.3 To allow the lintels to be replaced the wall will need to be supported with needle beams above the lintel level. Outline proposals for this are given in M/W sketch SK_04. (Note: since this sketch was prepared, the cross wall south of the spine wall has been removed. Hence the propping arrangement will be altered, but the principles are unchanged.)



Excerpts from SK_04 - Temporary works proposals

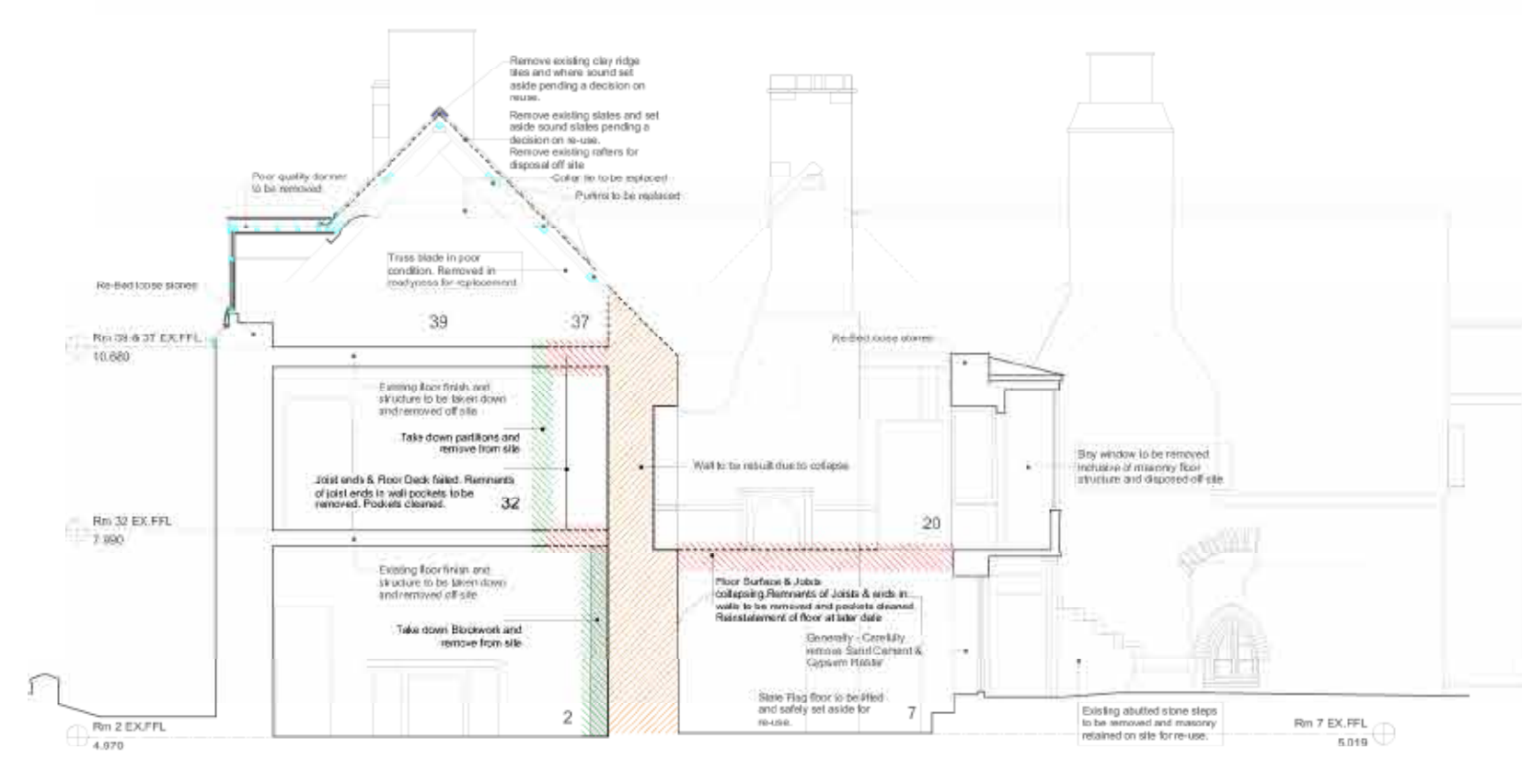
As the wall was inspected, it collapsed. Thanks to careful planning and assessment of the risks, no one was hurt. After further assessment of the remaining wall, it was determined that water ingress from the failed valley gutter above had washed away the walls core. Leaving two skins of stone with only cement plaster and pointing holding it together. The wall was carefully dismantled down to stable areas ready for rebuilding. All suitable stone from the wall was cleaned for re-use. The Structural Engineers & Architects amended their drawings and re-issued a Listed Building Consent application.



Spine wall collapse

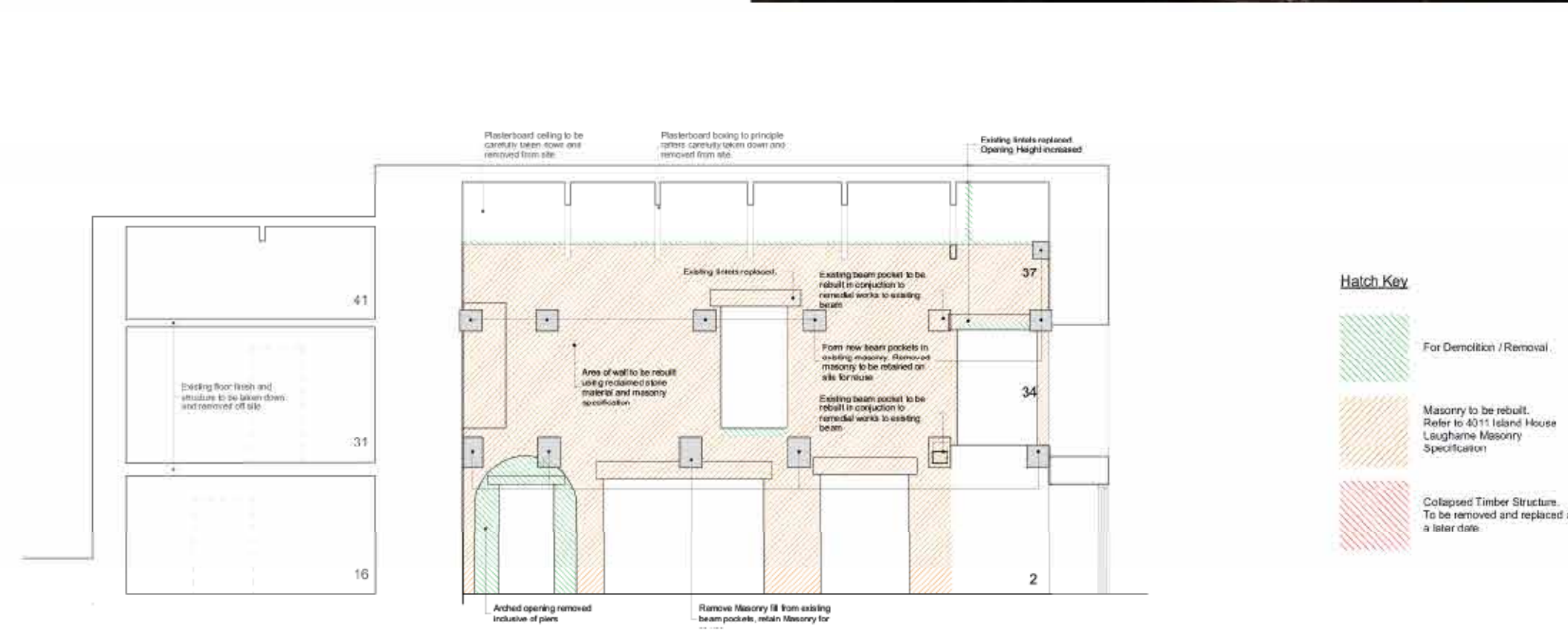


Spine wall collapse



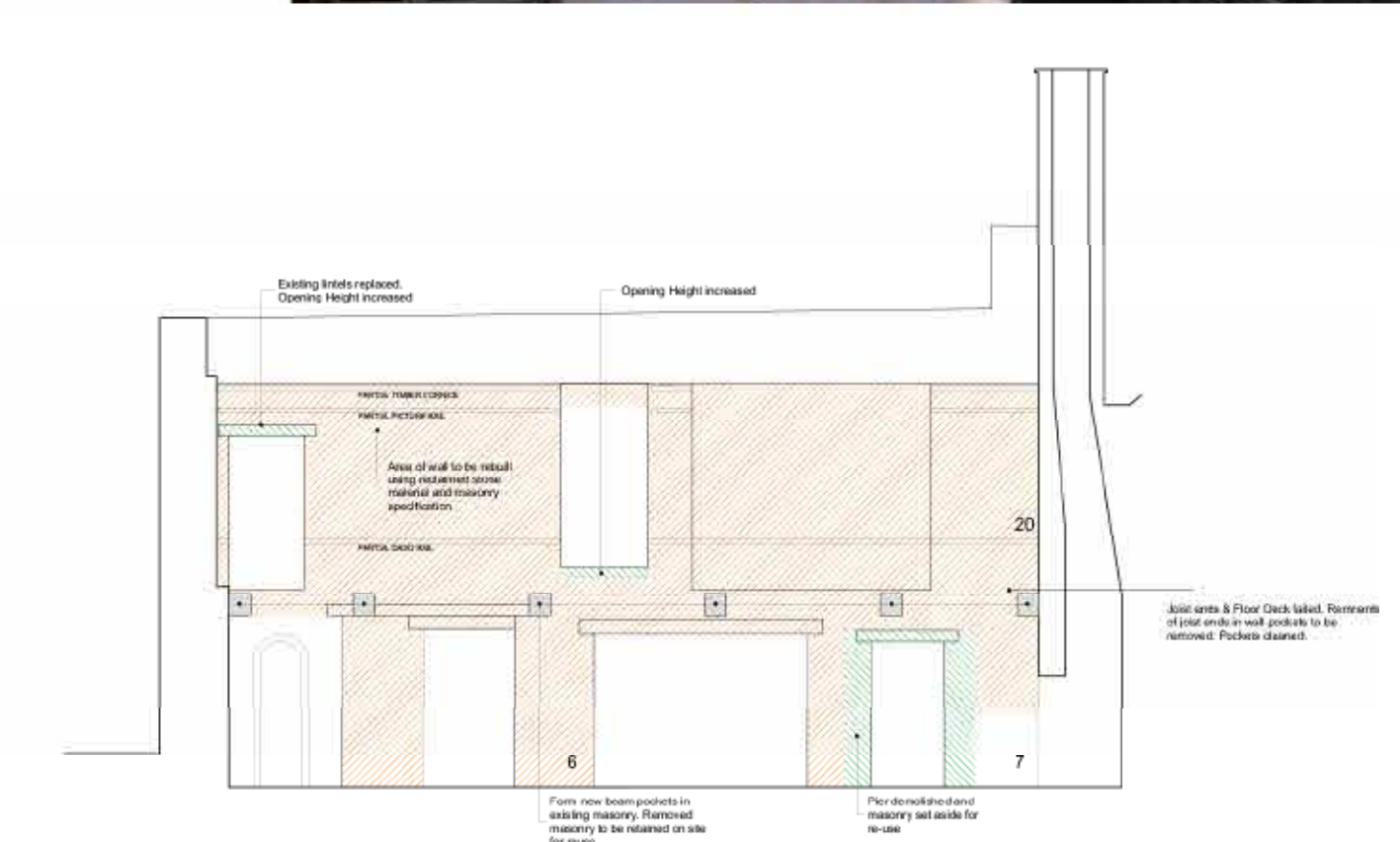
Section through Spine Wall

Architect's updated drawing showing the extent of rebuild proposed



North Elevation of Spine Wall

Architect's updated drawing showing the extent of rebuild proposed



South Elevation of Spine Wall

Architect's updated drawing showing the extent of rebuild proposed



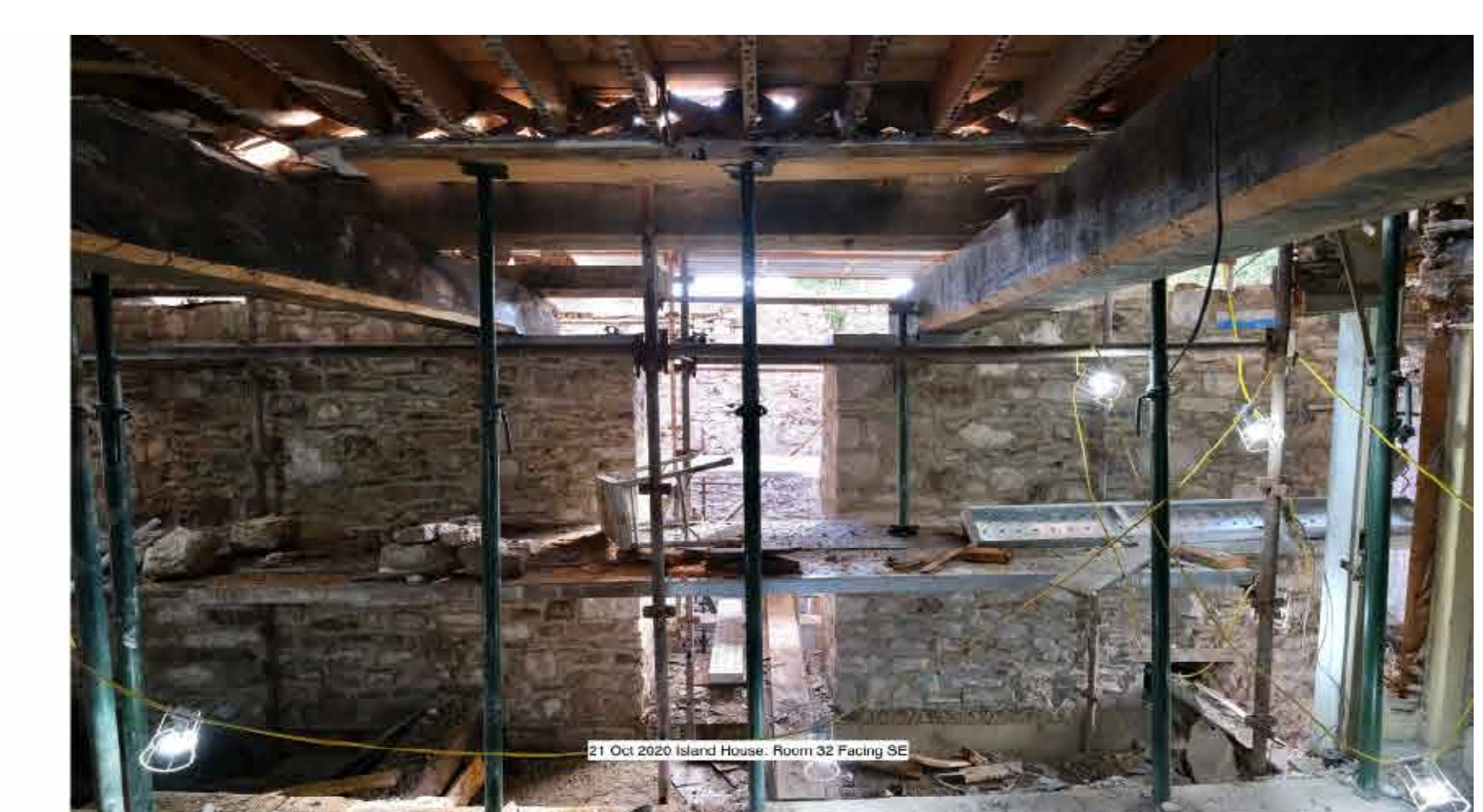
Spine Wall rebuild up to first floor level

Note new Lintels across the openings and new beams tying the spine wall to the front wall. Eventually the rotted floors would be removed.



Spine Wall rebuild above first floor level

Note new beams tying the spine wall to the front & back walls.



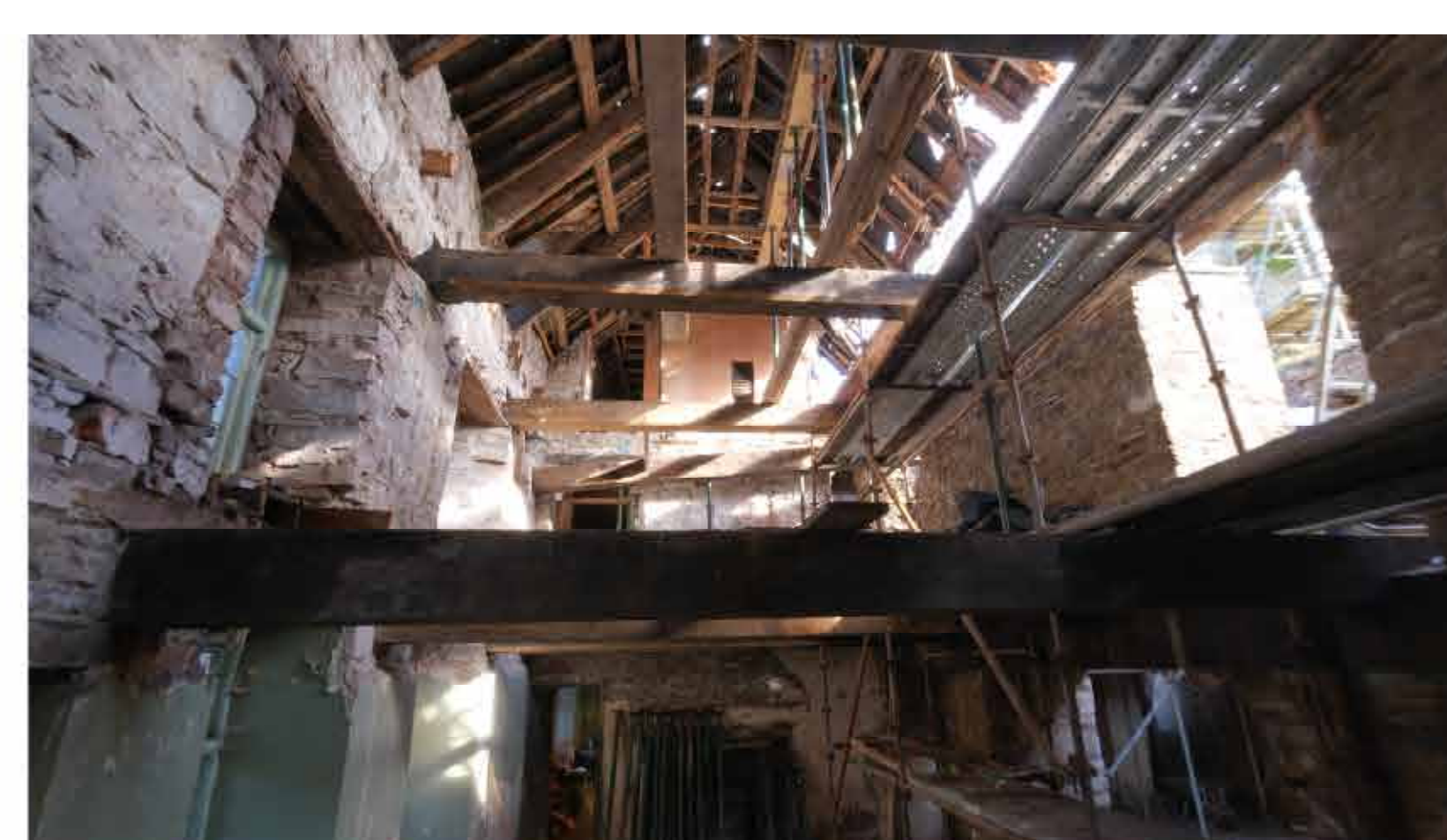
Spine Wall Rebuild up to Second Floor Level

Note new beams at second floor level. The structure is becoming knitted together



Spine Wall complete to roof level

New floor beams installed at first and second floor level



Spine Wall complete to roof level

New floor beams installed at first and second floor level



Spine Wall complete to roof level

New floor beams installed at first and second floor level