# 228 - BANK HOUSE

Structural Report -

15/06/2021

JAKE SMITH ENGINEERING

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# Contents

## Project Details

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|---|---|
| Client: | c/o Hand Drawn Home |
| Building Type: | Residential |
| Location: | Bank House<br>Sutton St Nicholas<br>Hereford<br>HR1 3AU |
| Scope: | 1. Attending site to assess the existing structure<br>2. Undertake a non-invasive visual survey of the structure<br>3. Review recent remediation measures<br>4. Desk study of structure remediation documentation if available<br>5. Preparation of structure condition report summarising findings |

# Introduction

3.1. Jake Smith Engineering has been appointed to provide a structural condition report for a period house located in Sutton St Nicholas, England.

3.2. Site was attended on Wednesday 9th June 2021. Conditions were fair. The property owners were in attendance to provide access and answer questions. Access was possible to most areas of the buildings with the exception of loft (viewable from hatch only) and the rear of the property (first floor & ground floor) which had partially collapsed.

3.3. The property has been vacant for two years. Prior to this, the property was inhabited by an elderly couple who were not able keep the property in an adequate state of repair. As such, the property is in a poor condition with water ingress causing partial failure to a number of structural elements and internal finishes.

## Assumptions & Limitations

4.1. This report provides preliminary commentary as to the observed structural condition of the building.

4.2. The investigation is limited to a non-invasive visual assessment of the structures. Any observations outlined will likely require verification through further investigation.

4.3. This report should not be used directly for construction without the further investigation specified within this report.

4.4. This report is not intended to provide a full list of repairs & remediations – other remedial works may be identified with further investigation/surveys and as work progresses.

## Codes

5.1. The following information / Codes will be used for design:

- Design of timber Structures – general design
  - BS EN 1995-1-1 - and relevant National Annex
- Action on structures - Snow loads:
  - BS EN 1991-1-3 - and relevant National Annex
- Action on structures – Wind loads:
  - BS EN 1991-1-4 - and relevant National Annex
- Accidental Actions / Disproportionate collapse:
  - BS EN 1995-1-7 - and relevant National Annex
- Building Regulations – Approved Documents

## Site situation

6.1. The site location is given below:

Bank House
Sutton St Nicholas
Hereford
HR1 3AU


Figure 1: Site location

6.2. Site altitude is 62m above sea level

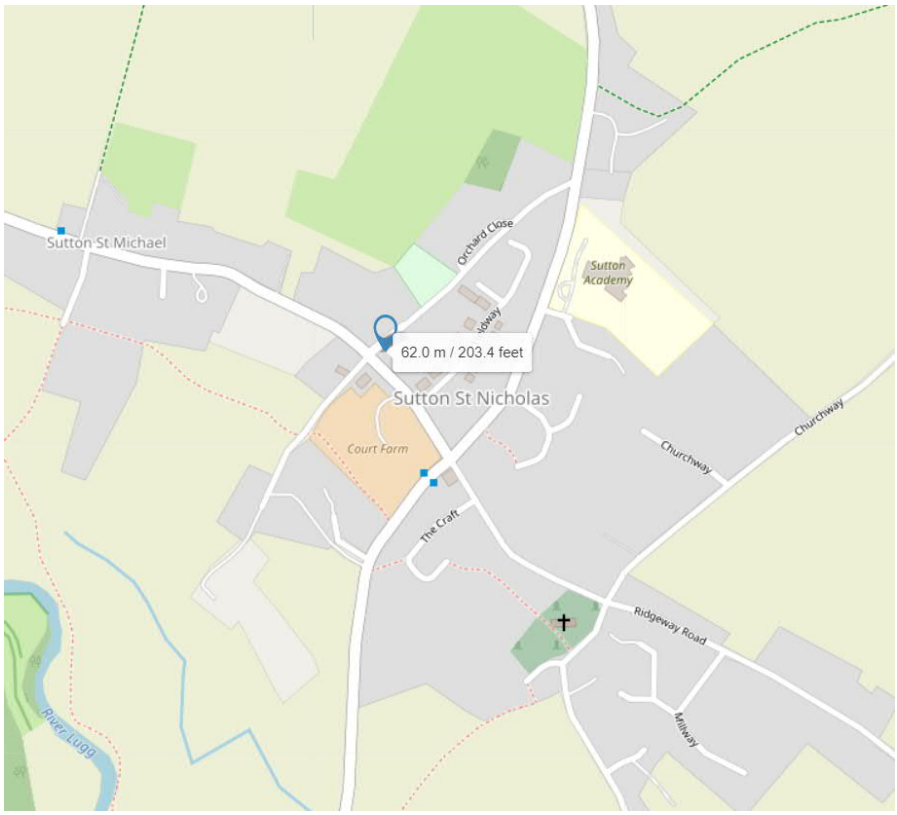



Figure 2: Site altitude

6.3. Site geology shows that the structure sits on Silurian Rocks – Siltstone & Mudstone. Based on period, the building is most likely not built directly off bedrock but rather an intermediate soil.

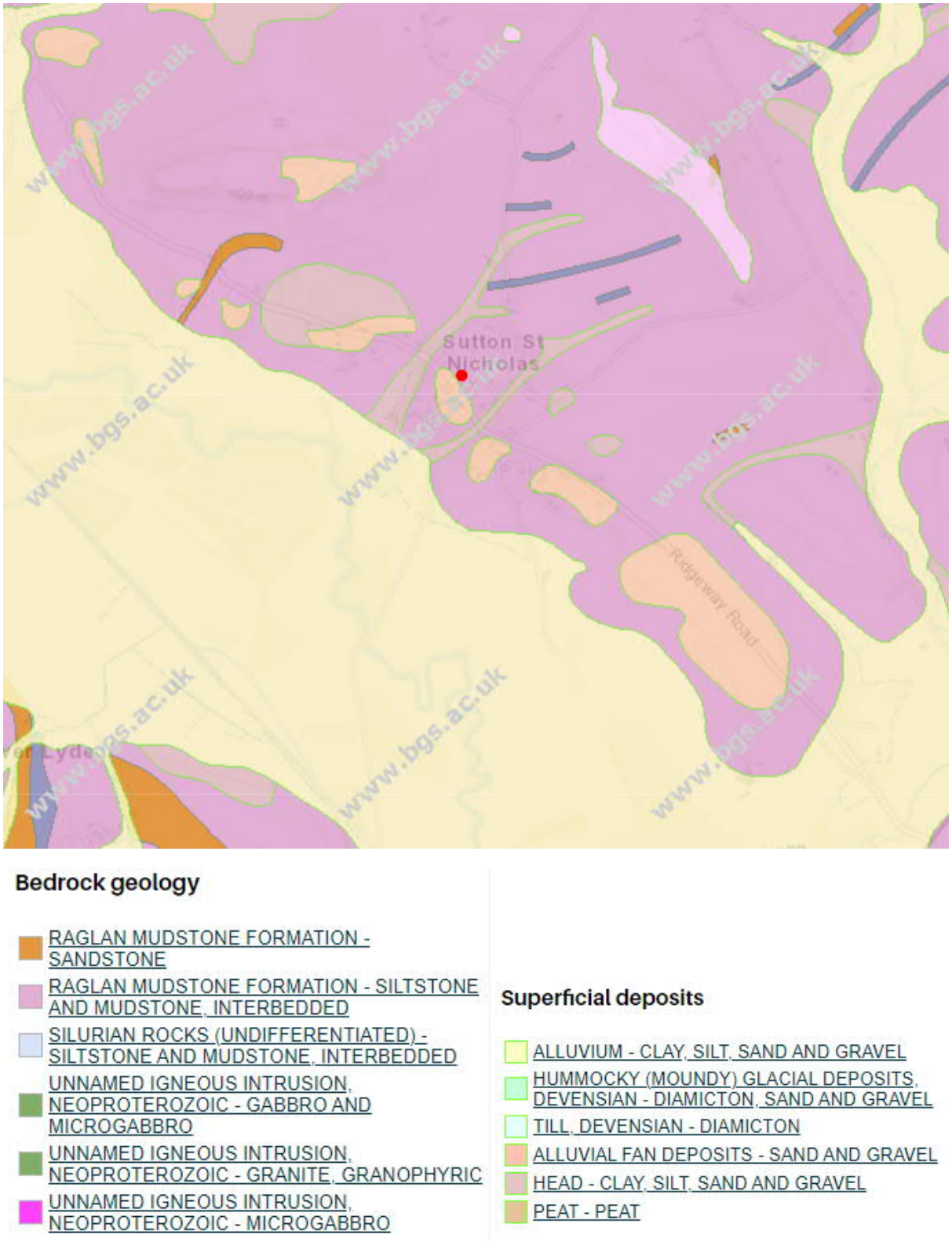



Figure 3: Site Geology

6.4. The site is mostly flat and based on Raglan Mudstone bordering Alluvial Fan deposits.

## House

7.1. The house is of mixed stone and brick construction with timber floors and timber trussed roof clad in slate. The exact age of the house is unknown, but it is assumed to be at around 200 years old. The house is set over three storeys with a cellar, ground and first floors.

7.2. The stone walls are assumed as solid stone construction in line with similar properties in the area. Internal walls are brick or timber clad in plaster.

7.3. The roof is covered in slate. The roof has failed in a number of areas letting water into the property.

7.4. Chimneys are a mixture of stone and brick construction.

7.5. Windows are typically single glazed. There is no insulation anywhere in the property.

7.6. There are two stairs connecting ground to first floor and a two stairs connecting ground the cellar with one being external.

## Roof

7.7. The roof construction is a cut roof supported off a series of trusses (mainly kingpost). The roof has a hidden central valley.

7.8. The roof space above the first floor is accessible via small hatch in northern bedroom:

7.9. Viewing was limited to the direct vicinity of the roof hatch as entering the roof space would be dangerous given its condition. The roof timbers are assumed as oak.

7.10. Many of the slates have failed and there are multiple areas of water ingress.

7.11. The Some of the roof timbers have rotted through completely leaving the roof in a condition of partial collapse.

7.12. Due to the failure of some key structural elements, the roof structure should be treated as unstable as it has the potential to collapse. The most severe failure is under the central valley as would be expected. Propping could provide a degree of support but we believe it is more likely to provide a misplaced sense of security.

7.13. The ceiling under the roof structure has also failed in most rooms due to water ingress.




## Walls

External Walls

7.14. The walls are in varying condition around the perimeter of the property with most areas being in fair condition given the condition of the rest of the property. The walls are a mixture of stone and brick. The exterior has been partially rendered. The pointing is varying in quality with evidence of cementitious mortar. Cementitious mortar can be detrimental to the stone.

North Elevation

7.15. The brickwork and stonework at the rear is in fair condition. Some plant growth is evident which will be causing damage and the brick chimney is leaning.

7.16. There is no significant bow or lean to this wall.

East Elevation

7.17. The Eastern elevation has been rendered. The render cover seems relatively good with only a few visible cracks. There is extensive ivy growth visible at the eves which has damaged the gutters and roof.

7.18. There is no significant bow or lean to this wall.

7.19. An opening to a basement is located on this side of the building.

South Elevation

7.20. The brickwork front is in fair condition. Some plant growth is evident which will be causing damage. There is extensive ivy growth visible at the eves which has damaged the gutters and roof.

7.21. Ventilation for the raised floor void is evident around the building perimeter

7.22. There is no significant bow or lean to this wall.

West Elevation

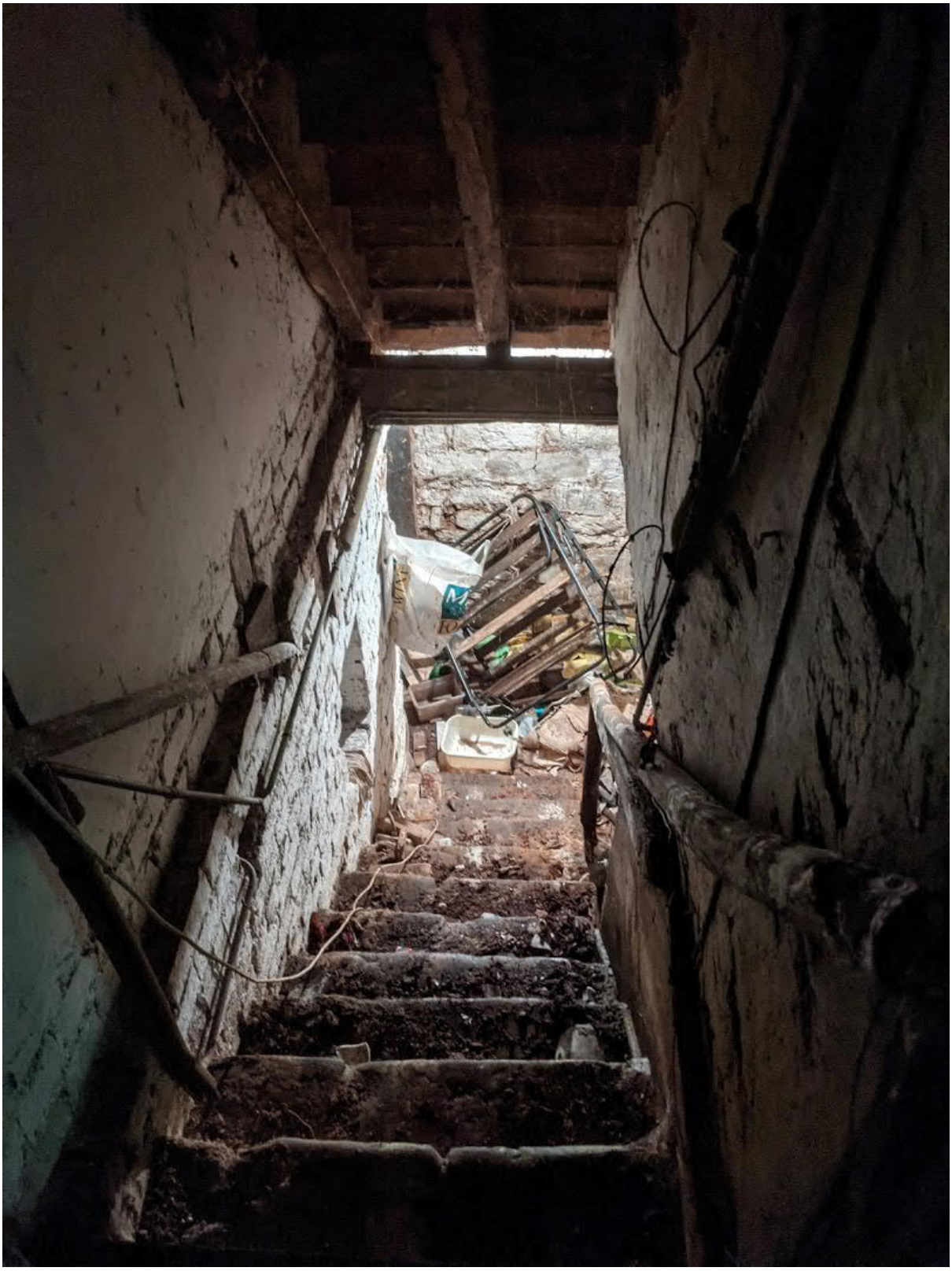
7.23. The west elevation has the most varied stone condition. It appears that the stonework and masonry is of varying age suggesting that the structure has been historically altered.

7.24. Some plant growth is evident which will be causing damage. The northerly brick chimney is leaning and the southerly one is showing some weathering to the brickwork.

7.25. There is no significant bow or lean to this wall.

## Basement/subfloor

7.26. The property has a basement under part of the southern side of the building. The floor of which appears to be formed of compact soil. The walls are formed of brick and stone. There is an internal brick wall which appears to form support for the floor joists above.



7.27. The floor is supported by a series of oak beams and joists. These are in varying condition as the humidity is very high. Water from the roof is coming through the building to the basement. Whilst some beams may be salvageable, there is quite impressive mould growth on some of the beams.

## Floors

Ground floor

7.28. The ground floor is suspended over the southern side of the structure and ground bearing on the norther side under what is assumed to be a later extension.

7.29. The ground floor feels solid under foot for the most part but the inspection of the basement timbers suggests significant decay.

7.30. The internal fabric of the building is dilapidated having suffered prolonged neglect allowing ingress of weather.

7.31. The collapse of the central roof has led to a significant and continuous ingress of water down the central stairs. This has led to significant damage to the stairs and surrounding structure.

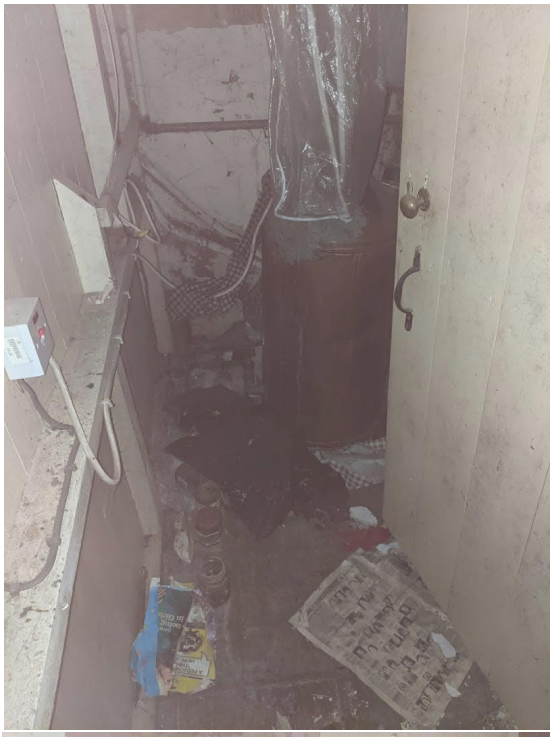
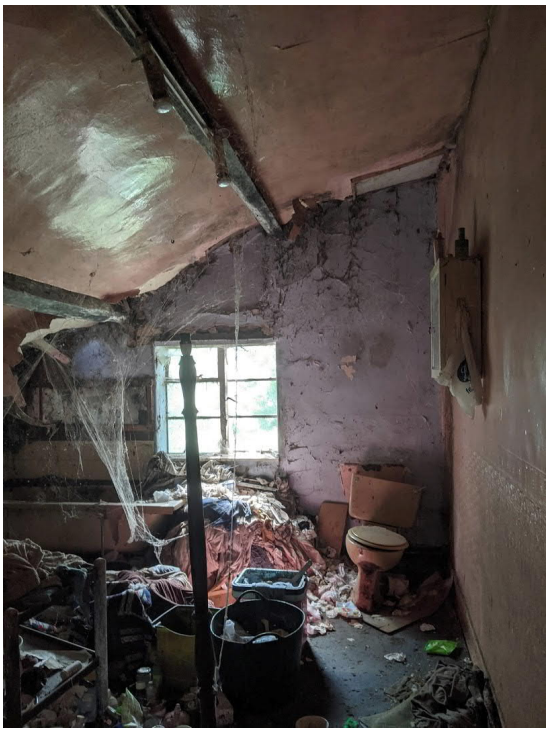
7.32. The most significant structural failure on the ground floor is the collapse of the first floor at the rear of the property above the kitchen. A beam (or number of beams) has failed causing the floor to collapse over the kitchen.

7.33. There is a small lean-to extension at the rear off the kitchen with a polycarbonate roof. Again, the structural fabric has been compromised by neglect.

First floor

7.34. The first floor is a timber floor supported directly off the masonry walls and beams below. The first floor is very dilapidated. The humidity is high and water has been able to enter the rooms from the failed roof (see 7.13).

7.35. The floor in the north side of the building has collapsed into the kitchen below. This is likely due to the failure of the roof above coupled with water leaks from the domestic supply.


7.36. Daylight can be seen directly from some of the first floor rooms through holes in the ceiling and roof above


7.37. The stairs are in a poor state of repair as explained previously. There is a make shift gutter filling a wheelie bin fashioned around the stairs due to the volume of water being directed down the stairs.

## Recommendation

8. Years of neglect have left the building in a very poor condition with much of the structural fabric having been compromised. Two separate instances of partial collapse have already occurred.

8.1. The extent of the dilapidation requires that the building structure be deemed as unsafe. We recommend that any remedial or demolishment works be undertaken from a position of safety external to the building envelope as additional collapses are likely.

8.2. It is possible that during further investigation/ during construction works, areas of concern may become apparent not currently included within this report.

8.3. It is anticipated that the structure will be largely demolished in order to safely remediate. Details of which TBC by the project engineer.

8.4. The masonry and stonework are in redeemable order throughout most of the property. However, removing the unredeemable elements of the structure (timberwork, roof and internal finishes) whilst maintaining the masonry safely will pose a challenge.

8.5. A systematic remediation to the structure and fabric of the buildings should ideally be undertaken based on (but not limited to) the issues highlighted within this report.

8.6. A mason should be appointed to ascertain necessity for pointing and repair to the stonework and brickwork throughout the property.

8.7. All timberwork and connections should be inspected for structural inadequacy, decay and woodworm to confirm safety and ascertain requirements for remediation. Timber present within the masonry build-up of the walls and members intersecting walls are particularly vulnerable.

8.8. This report is not intended to provide a full list of repairs & remediations – other remedial works may be identified with further investigation/surveys and as work progresses.

8.9. Additional photos are available upon request.