BASSET CENTRE & WHITE HOUSE, CAMBORNE:

STRUCTURAL SURVEY OF EXISTING GRADE II LISTED BUILDINGS

Revision:	**Date:**	**Notes:**
C1	03.04.24	Issue for planning submission

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1.0 Introduction

Airey and Coles Consulting Engineers were instructed to conduct a structural survey of two existing buildings known as the Basset Centre and White House. The buildings are situated within a combined site on Basset Road, Camborne. Both buildings are Grade II Listed, Entry No's 1142689 and 1328115 respectively. Details of the listings can be found on the Historic England website (www.historicengland.org.uk).

A site inspection was undertaken on 28th September 2023 by Sam Gardiner of Airey and Coles Consulting Engineers. The weather was dry and overcast, permitting good visibility.

All observations made to the external fabric of the buildings were viewed from ground level unless noted otherwise. Any parts of the structure which were covered, unexposed or inaccessible could not be visually inspected and therefore cannot be reported upon.

This report is based on notes taken during the site inspection without benefit of monitoring or previous knowledge of the buildings.

Figure 1: Site plan showing the Basset Centre, White House, and other key features

Key:

- *Basset Centre*
- *White House*
- *Portacabin style prefabricated units (not surveyed)*
- *Stone boundary wall separating White House and Basset Centre*
- *Glazed lean-to entrance structure*

The Basset Centre was originally constructed as a Board School dating from 1893 and is now partially occupied by Camborne Town Council and the Town Library. The first floor of the building is now largely vacant.

The White House, also known as 24 Basset Road, was originally constructed as a detached residential dwelling dating from the mid C19. The building has since fallen into a state of disrepair and has laid vacant for several years now. The building as been extended on the rear elevation with a series of modern Portacabin style units, as indicated in figure 1. These are not within the Historic England Listing and will not be discussed further within this report.

2.0 Basset Centre

2.1 Observations & Comments

The Basset Centre is primarily a two-storey building with a duo-pitched roof. The building includes a single storey extension to the rear corner which follows the architectural style of the main building.

Figure 2: Photograph taken from Basset Road showing the front elevation of the Basset Centre

The following commentary should be read in conjunction with the annotated floor plans provided in section 2.2.

2.1.1 Ground Floors

At ground floor level the Basset Centre is subdivided into three areas with no direct access between, as indicated in figure 3.

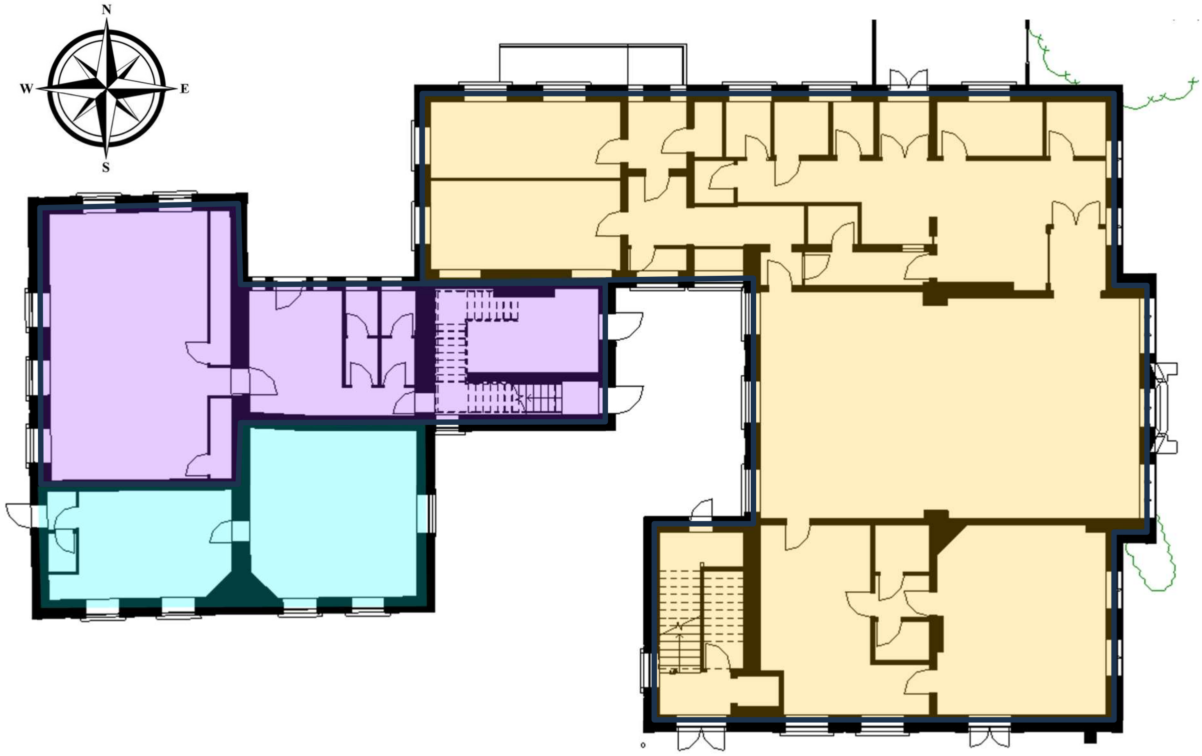

Figure 3: Plan on Basset Centre at ground floor level showing area references

The ground floor is set at a consistent height throughout the main two-storey building highlighted beige, figure 3. The floor level in the single storey extensions and the stair core (purple and cyan, figure 3) is set approximately 500mm lower than the main building.

Ground floors were found to be of solid construction throughout and appear to be ground bearing. Floors at this level were typically covered with a carpet finish thus direct inspection was not possible. However, the floors appear to be in sound condition underfoot and no significant defects were noted during survey.

A suspended Metal Framework (MF) ceiling system has been installed through the majority of the main two-storey building. The ceiling appeared to be in fair condition throughout.

2.1.2 First Floor

The first floor level of the Basset Centre is accessible via two staircases at the rear of the building. These staircases appear to be constructed in reinforced concrete with a carpet finish to the treads and landings. Both staircases were found to be in good condition and no structural issues were noted.

The majority of the first floor structure comprises traditional solid timber joists spanning between load bearing masonry/stone walls. Floors vary in condition and are assessed individually by area. Refer to Section 2.2, figure 24 for the first floor area references.

The floor joists at this level were typically covered with a carpeted floor finish over plywood, on solid timber floorboards. In some areas, floor joists could be seen from ground floor level by removing suspended ceiling tiles.

Within Areas F1, F2, F4 and F5 (Section 2.2, figure 24) floor joists span between the front and rear elevations. The span is divided in two by a load bearing central spine wall. The floor structure in these areas appears in sound condition with a slight ‘spring’ under foot, as expected for a property of this age and construction. General distortion and undulation was prevalent throughout. The floor in Area F5 was noted as being particularly unlevel.

Area F3 is a plant room accessible from the main corridor. This room has a raised concrete floor structure, set approximately 250mm above the typical finished floor level. Cracking of the concrete floor was noted near the entrance to the room (figure 4).

Area F6: It was not possible to determine the span direction of the floor joists in this location, however it is likely they follow the same principle as Areas F1-F5. The floor structure generally appeared serviceable, although deformation and some ‘spring’ under foot was noted.

Area F7 is a large open plan room. Floor joists in this area appear to clear span across the room between the stone external walls. Although areas of the floor towards the west end of the room remain serviceable, significant undulation of the floor was noted, particularly at the east end of the room. An area of extremely soft and bouncy floor was noted in the north-east corner of the room.

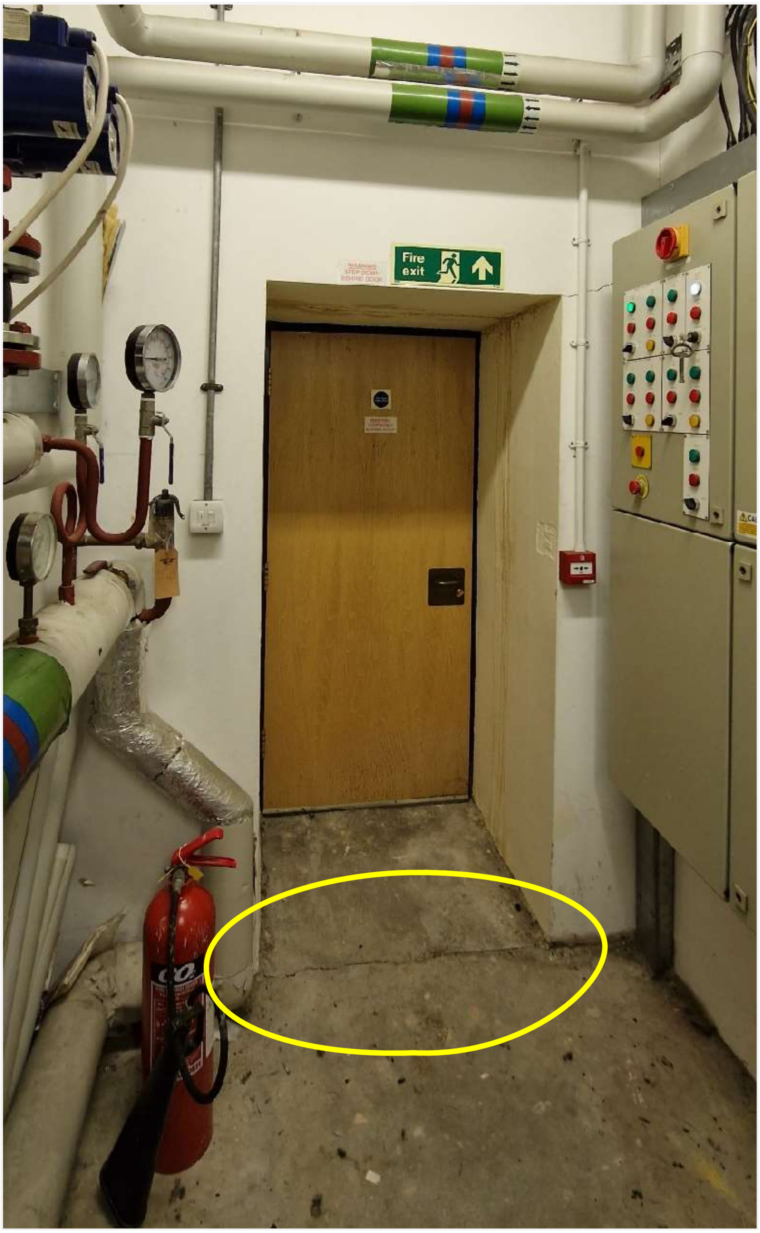

Figure 4: Photograph of first floor plant room showing cracked floor

2.1.3 Roofs

The following observations were made from ground level externally, and where possible, through limited access hatches internally.

The building comprises duo-pitched hipped roofs covered with a combination of natural slate and artificial slate. Broken and slipped roof slates were noted sporadically across the roof and in the perimeter gutters.

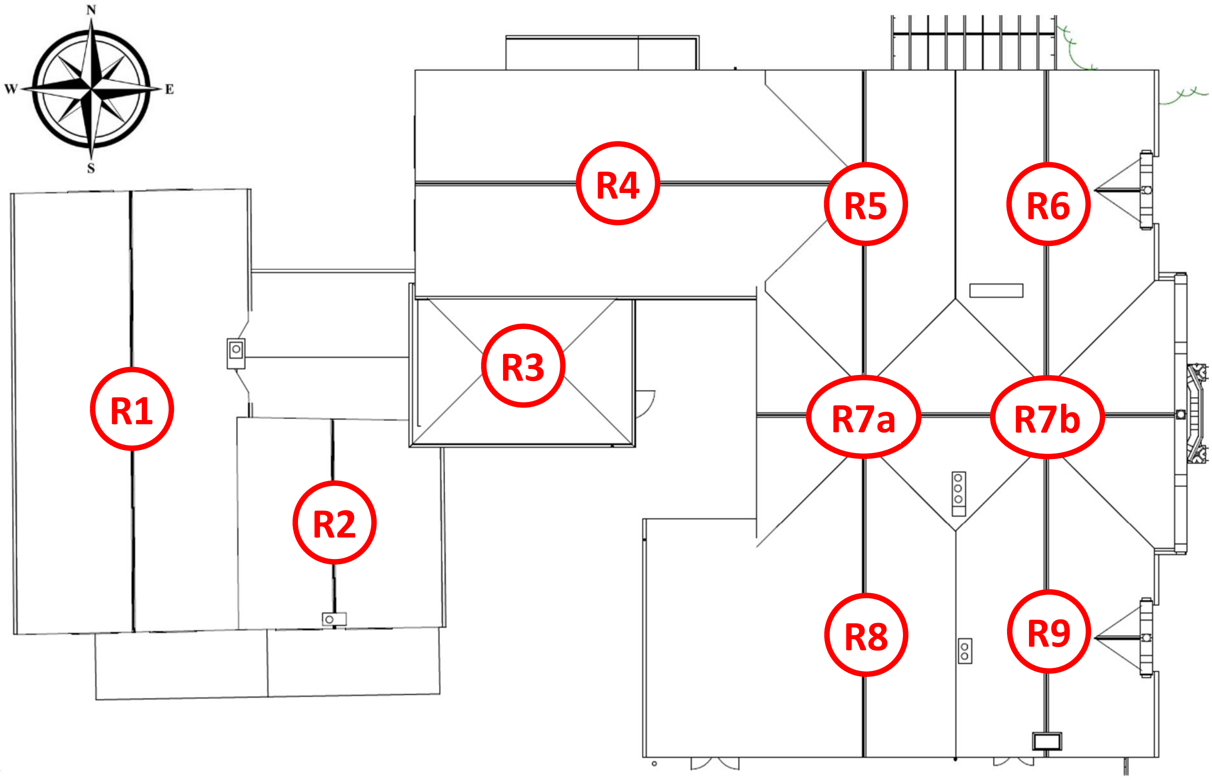

Figure 5: Plan on Basset Centre at roof level showing area references

The roof structures comprise various forms of primary timber truss typically set at a spacing of circa 2.5m. Trusses support timber purlins which in turn support timber rafters, battens and slate tiles over. There was no underlay or membrane present below the battens.

Roofs R1 and R2 were not accessible during our site inspection.

Roof R3 comprises two traditional King Post timber trusses which were found in good condition with no obvious signs of deterioration or insect attack (figure 6). Evidence of significant animal ingress was noted by the presence of branches and twigs throughout the loft space.

Figure 6: Photograph within roof space R3 showing King Post truss and evidence of animal ingress

Roof R4 consists of four evenly spaced timber arched braced collar tied trusses each with a metal tie bars at eaves level and a sag restraint bar at mid-span. Internally, this area of the building benefits from a vaulted ceiling to the underside of the collar tie (figure 7). The loft space above the ceiling was not accessible in this area.

The visible timber and metal components of the trusses have a painted finish and all appear to be in sound condition. No significant cracking of ceiling finishes was noted during inspection.

Figure 7: Photograph of roof area R4 showing underside of arched braced collar tied trusses

Roof areas R4 and R5 are separated by an internal wall which has been partially removed at first floor level to create an open floor plan. The remaining portion of this wall is thought to continue up into the roof space to support the timber purlin ends.

Roof R5 consists of two evenly spaced roof trusses of matching description to R4. The visible timber and metal components of the trusses have a painted finish and all appear to be in good condition. Signs of water ingress were noted at the southeast corner of the room (figure 8).

Figure 8: Photograph in Area R5 showing evidence of water ingress

Roof R6 is identical in form to R5, with two evenly spaced arched braced collar tied trusses featuring metal tie rods at eaves level. Trusses appear to be in sound condition where visible. Signs of significant water ingress were noted in the southwest corner of the room (figure 9), mirroring those noted on the opposite side of the wall in area R5. This aligns with the roof valley externally.

Figure 9: Photograph in Area R6 showing evidence of water ingress

For the benefit of the following comments, roof area R7 is subdivided into areas R7a and R7b to suit varying forms of construction.

R7a has a plant deck at eaves level formed traditionally using solid timber joists spanning between load bearing walls. The joists are covered with plywood boarding (figure 10). Elements of both floor mounted and ceiling hung plant were noted within this space. The plant area is accessible via a single access hatch in first floor room F7.

The form of roof construction in the plant area continues the aforementioned arrangement, with three evenly spaced arched braced collar tied trusses and metal tie rods at eaves level. The plant deck is clearly a comparatively modern addition to the original structure.

The typical boarded ceiling at collar tie level remains in place over the plant deck. However, a small opening within the boarding permitted limited inspection of the timbers in the loft space locally (figure 11). Trusses were found to directly support purlins, which in turn support timber rafters, battens and slates over. No underlay or roof membrane was present.

All timbers appear to be in good serviceable condition, however localised defects may be presents around broken or slipped tiles. Nominal surface rusting of the metal sag bars was noted.

Figure 10: Photograph in Area R7a showing plant deck

Figure 11: Photograph of Area R7a in roof space above ceiling level

Roof area R7b returns to the typical vaulted arrangement with two primary roof trusses spanning between internal walls. Trusses in this area are similar to those described previously, with the omission of the arched timber bracing.

Roof areas R8 and R9 follow the typical arrangement of arched braced collar tied trusses with metal tie bars at eaves level. Evidence of water ingress was noted around the chimney in area R9 (south elevation), with staining and peeling of ceiling and wall finishes at high level (figure 12).

Figure 12: Photograph of Area R9 showing evidence of water ingress around chimney

2.1.4 Walls

The external walls of the building are of solid construction, comprising snecked rock-faced sandstone with granite quoins and dressing. Stones utilised in the front elevation are relatively uniform with thin joints between stones. The side and rear elevation use less uniform stones with larger joints, as is common in buildings of this period and construction.

Internally, the stone walls are rendered and painted throughout.

The external fabric of the building was generally found to be in good condition throughout. Slight deterioration of the mortar pointing between stones was noted in localised areas of the single storey extensions and the rear elevations of the main building.

Instances of historic repointing and repairs to the masonry were noted in various locations around the building. Some of these repairs have been completed to a high standard using a traditional lime-based mortar with recessed joints. Other repairs appear to utilise a cementitious mortar (figure 13), which in some areas has been applied in a 'buttered' or 'strap' manner, overlapping the face of the stones (figure 14).

Figure 13: Photograph showing masonry repair with cementitious mortar

External walls constructed in stone must be allowed to breathe to release dampness within the wall. As well as acting as the bedding between stones, mortar joints should act as a pathway for moisture within the wall to be released.

When applied to soft sandstone masonry, cementitious mortar is often stronger than the stone itself, thus forcing moisture to track through the stone rather than through the bedding joints. This can lead to accelerated and unrepairable deterioration of the stonework.

When used with harder stone materials such as granite, cementitious joints can often become highly saturated causing moisture to surface within the building rather than externally, presenting as damp through the wall finishes.

Figure 14: Photograph showing 'buttered' or 'strap' pointed masonry

The internal walls of the building are a mixture of stone, brick and non-load bearing stud partitions. The ground and first floor plans have evidently been altered from the original layout to create open plan areas. Although not visible during survey, it is anticipated that a number of steel floor beams have been installed to allow the removal of internal load bearing elements. Refer to Section 2.2, figures 23 & 24 for further information.

General dampness and deterioration of wall finishes was noted throughout the external walls at ground and first floor levels.

Hairline-fine cracking was noted through the internal wall finishes in various locations, mainly at first floor level. Vertical cracking of wall finishes was noted below most window openings in area F7 at first floor level (figure 15). These cracks were not reciprocated externally and are considered to be superficial within the finishes.

Figure 15: Photograph of vertical cracking beneath first floor window openings

An internal solid wall has been partially removed at first floor level in Area F7. A steel beam measuring as a 203x102UB has been installed in place to support the remaining masonry wall above (figure 16).

Figure 16: Photograph of bulkhead enclosing 203x102UB steel beam

This steel beam appears to be performing as intended and no structural defects were noted. Some vertical cracking measuring circa 1-2mm was noted at the beam bearing on the northern external wall (figure 17).

Figure 17: Photograph showing cracking at first floor steel beam bearing

Extensive cracking was noted throughout the first floor plant room walls, from which a large array of plant is hung (figures 18 & 19). Cracks vary in width from hairline to circa 2-3mm.

Figures 18 & 19: Photographs showing plant room walls

Of particular note was a diagonal crack propagating from the corner of the door opening into the plant room. This crack measured circa 2-3mm and continued to the corner of the room (figure 20).

Figure 20: Photograph showing cracking around the plant room door opening

A load bearing central spine wall runs the full width of the building at first floor level and partially at ground floor level. The wall appears to support both the first floor structure and a large portion of the roof structure. At ground floor level this wall has been partially removed to create a large open plan room in the centre of the building, currently used as the Town Library. It is anticipated that a steel beam has been installed in place of the wall to support the spine wall above. Masonry piers were noted on each side of the room which appear commensurate to the support requirements of a transfer member (figure 21).

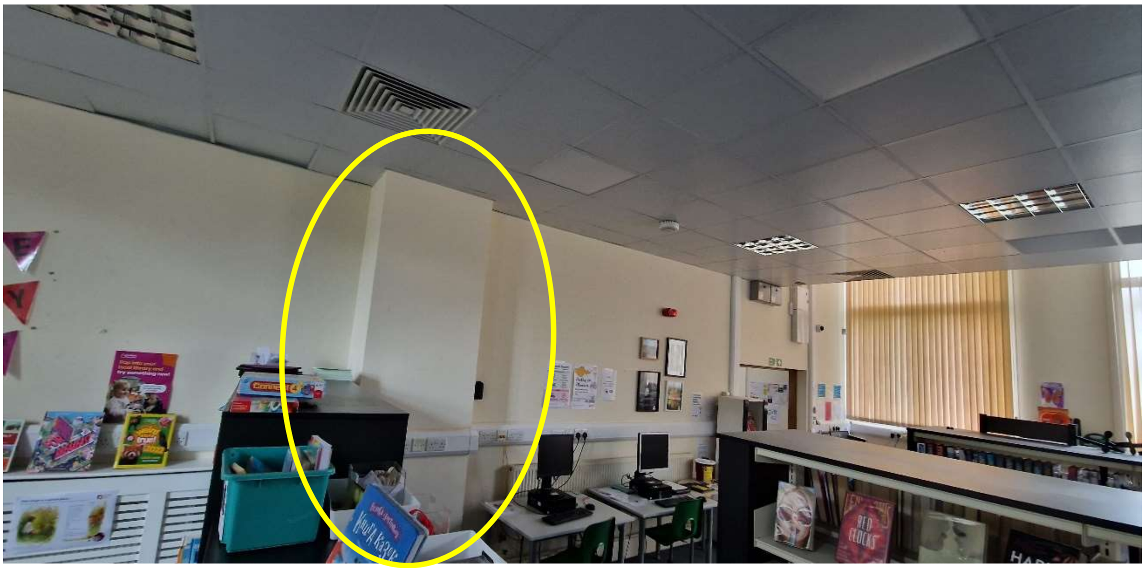

Figure 21: Photograph at ground floor level showing masonry pier

The remaining spine wall was found to be in sound condition at ground and first floor levels, with no significant cracking or other defects observed. The alleged steel beams within the ground floor ceiling void thus appear to be performing suitably for the current building use.

2.1.5 Lintels

Within the building, lintels are typically covered by wall finishes and it was not possible to ascertain their condition or form of construction. Internally, no significant defects were noted, other than hairline-fine cracking above openings, as expected in a building of this age and construction.

Externally, granite lintels span over door and window openings. One instance of lintel failure was noted at ground floor level on the south elevation of staircase S1 (figure 22). This lintel supports a significant height of external wall above. 3No. temporary props were noted internally within the window recess, although these do not directly support the failed lintel. No signs of movement or cracking were noted in the stonework above the opening at the time of this survey.

Figure 22: Photograph showing lintel failure over ground floor window opening

2.2 Annotated Floor Plans

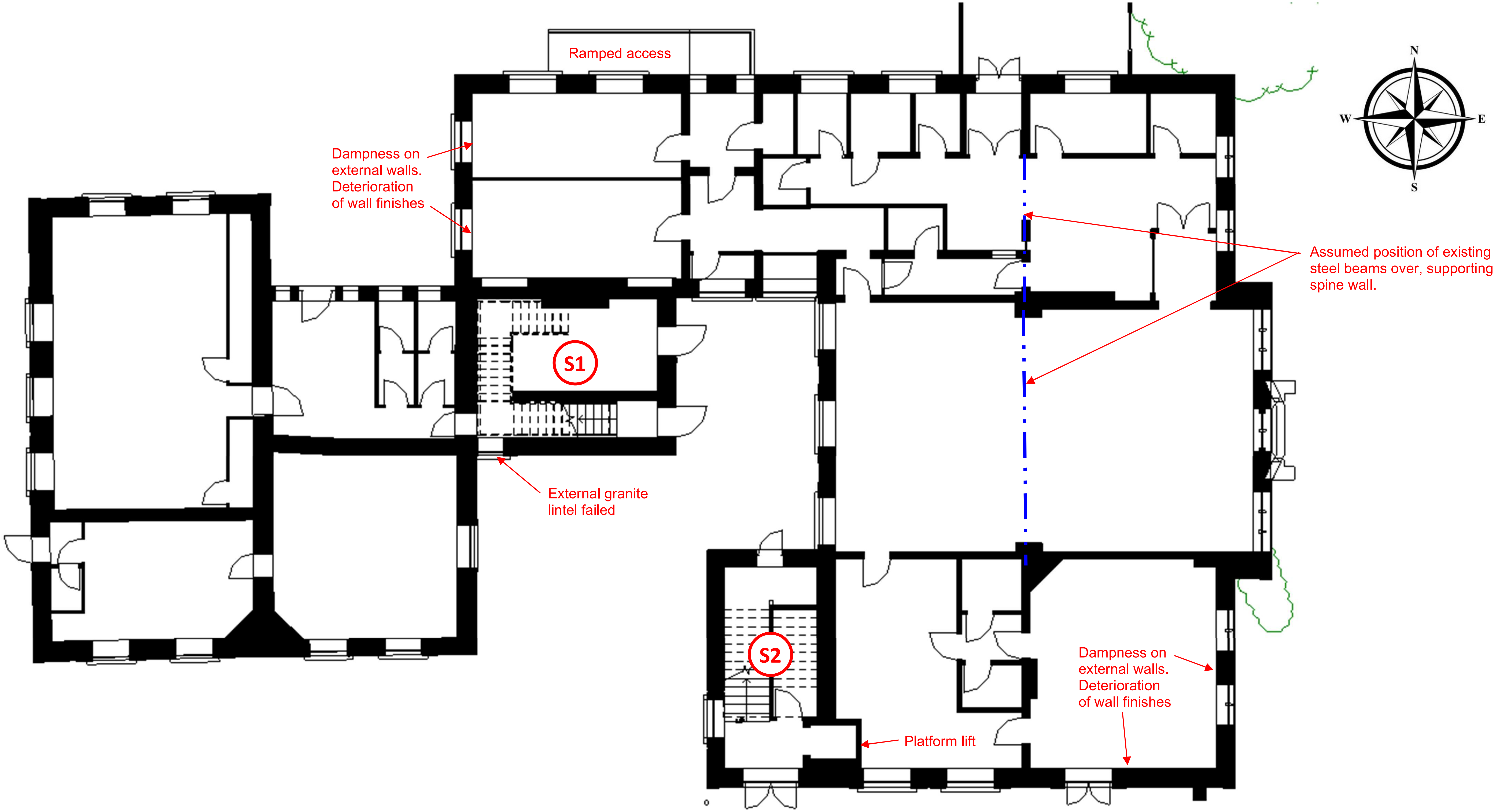

Figure 23: Basset Centre annotated ground floor plan

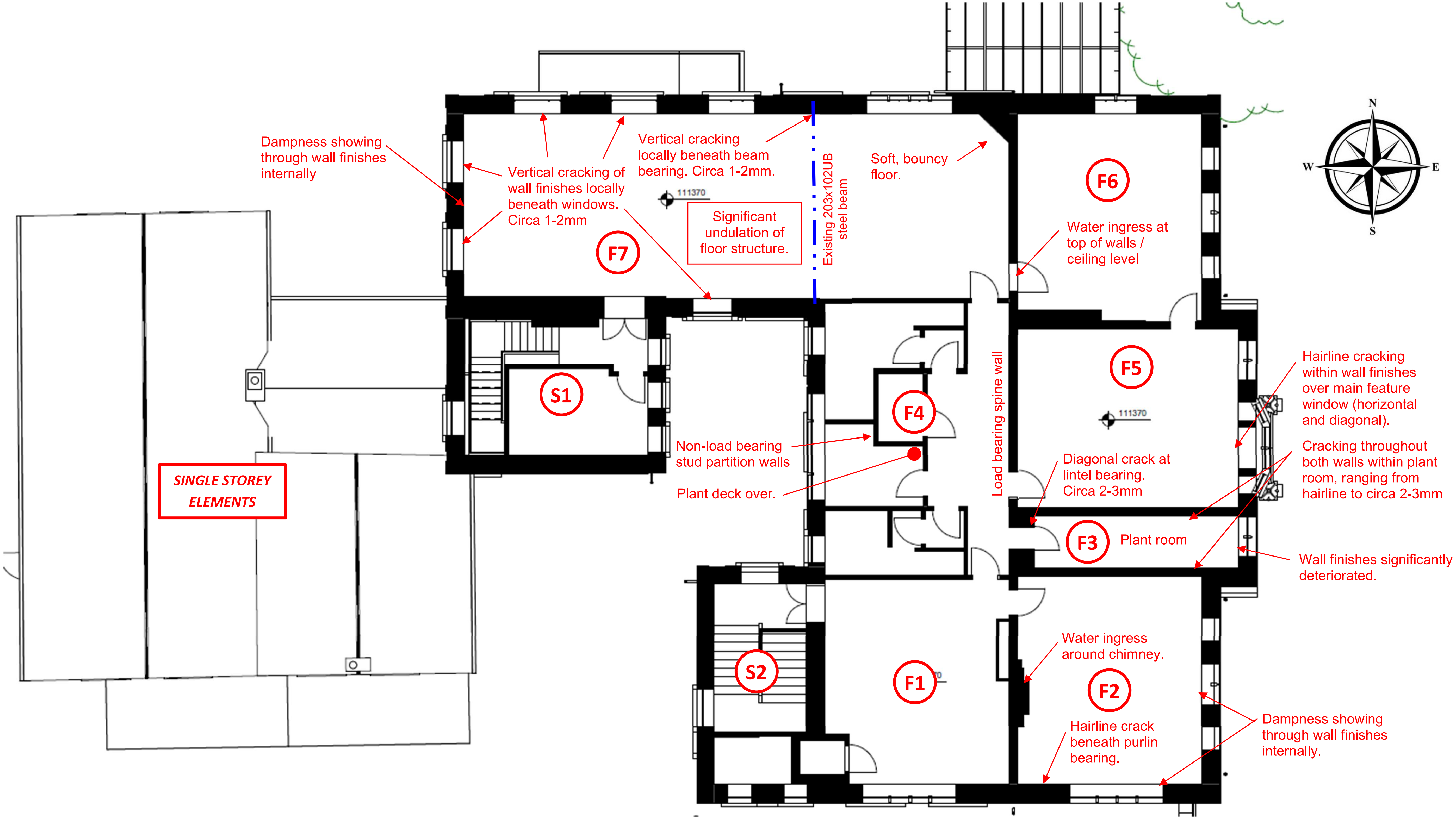

Figure 24: Basset Centre annotated first floor plan

2.3 Conclusions

Overall, the building was found to be in good condition and is an asset to the conservation area within which it is set. Nonetheless, as expected for a building of this age and construction, a number of defects were identified which require remediation to ensure the longevity of the building.

2.3.1 Ground Floor

The ground floor slab was entirely covered with finishes at the time of survey, preventing detailed inspection.

No structural defects were noted and the floor appears to be performing in a satisfactory manner for the current building use.

2.3.2 First Floor

The general 'spring' and unevenness noted within the majority of suspended timber floors is in line with expectations for a period property. Floor structures are mostly considered serviceable under the current building usage.

The more significant movement and undulation noted in area F7 may be an indication of undersized structure or poor condition timber beneath the floor finishes. Alternatively, some of the serviceability issues noted may have arisen from the historic remodelling of the ground floor layout. Removal of floor finishes and inspection of the timber joists would allow this to be confirmed.

Cracking noted within the raised concrete floor of the plant room aligns with a narrowing of the floor slab at the entrance to the room. Internal corners of floor slabs are naturally areas of high stress and are prone to cracking. Furthermore, the current use of the room results in large temperature variations compared to other areas of the building. The cracking is likely to be a result of thermal movements within the floor slab and is not of significant structural concern.

2.3.3 Roof

Internally, i.e. below ceiling level, roof trusses were found to be in good, serviceable condition and no structural defects were noted.

Missing tiles and defects within the slate roof covering will be allowing water ingress into the building. Although not accessible during this survey, water ingress is likely to have affected local areas of the timber structure and cases of wet rot are expected. The extent of this will not be known until the roof finishes are removed to allow proper access and inspection by a timber specialist.

Another cause of the water ingress noted on the ceiling and wall finishes is likely to be blocked or deteriorated gutters and flashings within the roof valleys and around chimneys.

It should be noted that the effects of water ingress will continue to deteriorate the structure until these issues are remediated.

2.3.4 Walls

External walls were generally found to be in good condition, although various defects were noted.

Historic repairs vary in quality and materials used. Cementitious mortar appears to have been used for repointing and repairs in some locations, which can result in dampness and deterioration of the masonry.

Areas of ‘buttered’ or ‘strap’ joints were noted which can result in damage to the stone face, over time or when removed.

Other areas of repointing have evidently been completed to a high standard with recessed joints using a traditional lime based mortar.

Internally, dampness was noted throughout the majority of the internal walls, as is common in this type of construction. This is likely due to poor ventilation amongst the other defects noted. It is also worth noting that the first floor of this building is predominately unoccupied and may have been left unheated for extended periods of time.

Hairline cracking was noted beneath a steel beam bearing at first floor level.

Hairline cracking over various window openings at first floor level. Vertical cracking was noted beneath first floor window openings in Area F7. These cracks appear to be superficial and are not uncommon around window openings where greater temperature variations occur.

Internal walls were generally found to be in good condition and no significant structural defects were noted.

Extensive random cracking was noted within the first floor plant room walls, which support a large array of plant. Generally cracking appears to be superficial within the wall finishes and is likely to be a result of the temperature fluctuations associated with the standard operation of the plant.

A diagonal crack of circa 2-3mm was noted to propagate from the plant room door lintel. This crack was not reciprocated on the other side of the wall.

Historic removal of ground floor walls was noted and, although not visible, it is anticipated steel beams have been installed to support the first floor load bearing elements. These beams appear to be performing suitably and no defects were noted to the first floor spine wall above.

2.3.5 Lintels

Door and window openings within external walls are typically framed with granite facing lintels externally.

Granite lintels are generally in good condition with no visible structural defects observed from ground level. One exception was noted over the ground floor window opening of stair S1, where the lintel has failed.

The cause of this lintel failure is unclear and could be a result of overloading or a natural fissure within the granite.

2.4 Recommendations

2.4.1 Ground Floor

The ground floor slab appears to be in sound condition and no remediation works are considered necessary at this time.

2.4.2 First Floor

The first floor structure is generally serviceable under the current building usage.

Floor area F7 requires further intrusive inspection. Floor finishes should be removed locally in several areas within the room to expose the timber floor joists. The area of floor noted as being particularly soft and springy should be included within these opening up works. Timber floor joists, and their end bearings should be thoroughly inspected by a structural engineer or timber specialist to confirm their condition. Joists sizes and spacing should also be measured to determine if the joists are suitably sized for their span condition.

If floor joist timbers are found to be in poor condition, further intrusive works are recommended in the other first floor rooms to identify any potential developing issues.

The crack within the concrete plant room floor slab may either be accepted or repaired using non-shrink grout finished with a flexible sealant appropriate for use in concrete slab movement joints. However, it is likely that the crack would reappear over time.

2.4.3 Roof

Due to the extent of defects and slipped slates it is likely that further issues would arise in attempting to undertake isolated patch repairs, and further defects are likely to continue to arise shortly after any repairs works. With due consideration of the overall condition of the roof covering, it is suggested that the roof finishes are replaced at the earliest opportunity. During this process the roof timbers should be accessed by a timber specialist and made good as required in accordance with the specialist's recommendations.

All valley gutters and down pipes should be cleaned of debris at the earliest opportunity. Flashings around chimney and gutters should be inspected during the roof recovering and replaced/made good as necessary.

2.4.4 Walls

It is recommended that all areas of spalling or missing mortar joints are carefully repointed throughout the building elevations, using a hydraulic lime-based mortar with recessed joints.

Previous repairs using cementitious mortar should be accessed by a specialist mason with experience of Heritage buildings. Although cementitious mortar is undesirable for stone walls, further damage can be caused to the building fabric in attempting to remove mortar buttered over the edges of the stone. It may be preferable to leave small areas of repair works untouched.

Where deemed necessary following specialist review, historic cementitious mortar repairs should be carefully removed, joints raked clean and repointed using a hydraulic lime-based mortar.

Fine and hairline cracking noted around window openings is not of structural concern and should be made good within the wall finishes.

Fine and hairline cracking within the plant room is generally not of structural concern. With due consideration of the usage of this room, the building owner may consider these superficial defects acceptable without remediation. It is however recommended that the more prominent crack at the entrance door lintel bearing is monitored using proprietary ‘Tell Tale’ crack gauges for a minimum period of 12 months. If the movement is not progressive, the crack may be infilled and finishes made good. If the movement is found to be progressive, crack stitching using helical tie bars may be required to prevent further issues.

The dampness visible throughout the external walls is likely to be lessened by the recommended remedial works to the roof structure and masonry. Consideration should be given to improving heating and ventilation throughout the building. However, to be conclusive, advice should be sought from a damp specialist.

3.0 White House

3.1 Observations & Comments

The White House is primarily a two-storey building with a hipped duo-pitched roof. The building is broadly L-shaped in plan with an additional wing off the northwest corner.

Externally, the architectural style of the building and applied finishes vary throughout the elevations. The original building has clearly experienced numerous modifications throughout its history.

Figure 25: North side elevation of the White House

The following commentary should be read in conjunction with the annotated floor plans provided in section 3.2.

3.1.1 Ground Floor

At ground floor level the White House has various points of access around the building elevations. The main entrance is set on the front elevation facing Basset Road. At the time of this survey the front entrance was disused and entry to the building was gained via a small single storey extensions projecting from the rear elevation.

Ceilings at ground floor level appear to consist of traditional lathe and plaster. Excessive dampness and areas of water ingress were noted sporadically throughout.

The ground floor undergoes several level changes throughout the building footprint. During the survey the floor structure was covered with floor finishes throughout. However, there was significant variation in the response of the floors underfoot, indicating varying floor constructions, i.e. ground bearing and suspended.

Ground bearing floors are assumed to comprise a solid concrete slab and appear to be in sound condition underfoot. No significant defects were noted during survey.

Suspended floors are assumed to comprise timber joists spanning between load bearing masonry/stone substructure walls. Generally suspended floors were notably excitable underfoot, likely as a result of water ingress and dampness within the building.

Figure 26: Photograph showing typical ground floor room

3.1.2 First Floor

The first floor level of the White House is accessible via two staircases. The main staircase leads off the main hall extending from the front entrance. The other staircase is set towards the rear of the building, adjacent to the north wing.

These staircases appear to be constructed in timber with carpeted treads and landings. Both sets of stairs appear to be in serviceable condition, although detailed inspection of the timber was prevented by the carpet finishes.

An area of significant water ingress was noted above the half landing of the main stair (figure 27). It is possible this ingress may also have impacted the stair construction below.

Figure 27: Photograph showing water ingress over main stair half landing

The first floor undergoes several level changes via small sets of timber stairs/steps. Carpet finishes were in place throughout. Based on the age and style of the building, as well as the response underfoot, the first floor construction is acknowledged to comprise timber floor joists spanning between load bearing walls.

The condition of the first floor varies between rooms. In general, a significant ‘spring’ was noted underfoot beyond that expected for a property of this age and construction. Subsequently the first floor joists are suspected to be in fair-poor condition throughout.

As per the ground floor, ceilings at first floor level typically consist of traditional lathe and plaster (figure 28).

Figure 28: Photograph taken at first floor level showing lathe and plaster ceiling

The ceiling has evidently suffered from significant dampness and water ingress which has caused debonding of the plaster finish and partial collapse of the ceiling in some areas (figures 28 & 29).

Figure 29: Photograph showing remnants of collapsed ceiling at first floor

3.1.3 Roof

The following observations were made from ground level externally and from first floor level internally. Access was not gained into the roof spaces due to the condition of the structure.

The building comprises duo-pitched hipped roofs with a modern pantile roof covering. External inspection of the roof covering was limited, however there was evidence of significant water ingress internally.

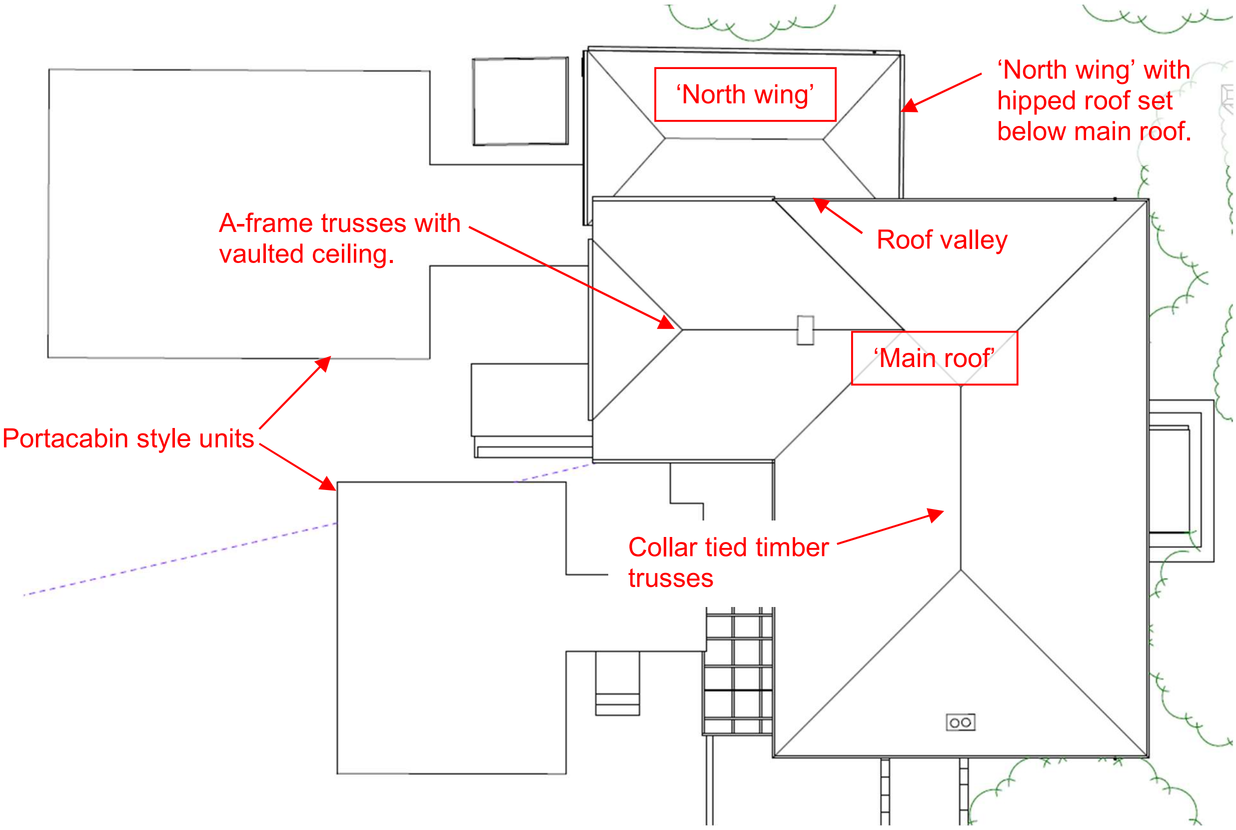

Figure 30: Plan on White House at roof level showing area references

Parts of the roof structure were visible through gaps in the partially collapsed ceiling. The roof structure was found to comprise traditional timber collar tied trusses at circa 2-3m centres. Trusses support timber purlins which in turn support timber rafters, battens and tiles over. It was not clear if a roof membrane or underlay exists within the build-up.

Thorough inspection of the roof timberwork was not possible during this survey. However, based on the widespread water ingress and dampness, significant deterioration of the roof structure is expected.

Figure 31: Photograph of collapsed ceiling around access hatch

The roof structure to the north wing of the building is set at a lower level to the main roof, creating a valley against the projecting external wall of the main building. The area of water ingress noted in figure 31 broadly aligns with the position of the valley generated by the abutting of the north wing to the main building. Poor maintenance and deterioration of valley gutters are common causes of water ingress and are likely to be the root of these issues.

Internally, a small section of the main roof benefits from a fully vaulted ceiling and an additional floor/storage over the first floor. The roof structure in this area consists of two primary timber 'A-frame' or 'raised collar tied' trusses supporting timber purlins (figure 32). A boarded or lathe and plaster ceiling finish to the underside of the rafters prevented further inspection of the wider roof build-up.

Figure 32: Photograph of 'A-frame' or 'raised collar tied' trusses to north wing

3.1.4 Walls

The external walls of the building are generally of solid construction and vary in appearance between elevations. However, the wall thickness of the north wing envelope at first floor level reduces to circa 300mm and is reminiscent of a modern construction of masonry rather than solid stone walls as apparent elsewhere.

The front (east) elevation, facing Basset Road, is finished in stucco render with Ashlar detailing (figure 33). This finish continues onto the north elevation and west elevation of the north wing, at which point the Ashlar detailing is lost and the wall is finished in plain render (figures 34 & 39).

Figures 33 & 34: Photographs showing front (east) elevation and north elevation respectively

The front entrance of the building comprises a porch with fluted Doric columns and pilasters, triglyph and frieze detailing to the entablature, and 1/4 set in fluted columns around the doorway (figure 35). A slight separation was noted between the porch structure and the face of the stucco wall finish. The crack widens at the top of the porch which is a pattern commonly associated with foundation settlement. Still, the cracking is currently minor and not cause for significant structural concern.

Figure 35: Photograph showing porch over main entrance to White House. Minor cracking/separation highlighted at interface with wall

Fine vertical cracking of circa 1-2mm was noted between ground and first floor openings (figure 36). This cracking is considered to be superficial within the render finish. Overall, the front elevation of the building is considered to be in fair condition.

Figure 36: Photograph showing vertical cracking between window openings on front elevation

The west (rear) elevation of the main building features exposed stonework at first floor level and painted stonework at ground floor level (figure 37). Various alterations and repairs are evident across this elevation, including sections of brick within the reveals of two first floor windows. Slight deterioration of the mortar pointing between stones was noted. Aside from these anomalies the stonework was found to be in fair condition.

Figure 37: Photograph showing rear (west) elevation of White House

A sizable crack was noted at the junction between the rendered north wing and the exposed stone elevation of the main building (figure 38). Access to this level was not gained externally, hence the crack width could not be measured during the survey. An array of fine cracking was also noted throughout the rest of the west elevation render (figure 39).

As noted previously, the wall thickness of the north wing at first floor level measures circa 300mm which is indicative of a modern masonry construction rather than traditional solid stone walls. This portion of the building may be an extension of the original structure. If so, the aforementioned cracking is likely to be a result of differential movement between the 'modern' and original structures.

Figure 38: Photograph showing vertical crack on the west elevation of White House

Figure 39: Photograph showing west elevation of White House

The south elevation of the building generally features exposed stonework, although a patch of boarding or unpainted render was noted to one corner of the elevation (figure 40). The purpose of the board/render patch is unclear. A large growth of climbing Ivy has reached the roof soffit across approximately one third of the elevation. If left unchecked, vegetation growth can lead to significant structural issues within the building fabric. At the time of this survey, the stonework visible on this elevation was generally found to be in good condition and no significant structural defects were noted.

Figure 40: Photograph showing south elevation of White House

Internal walls were notably damp throughout, as expected within a derelict property experiencing water ingress. No significant cracking or other structural defects were noted during this survey.

3.2 Annotated Floor Plans

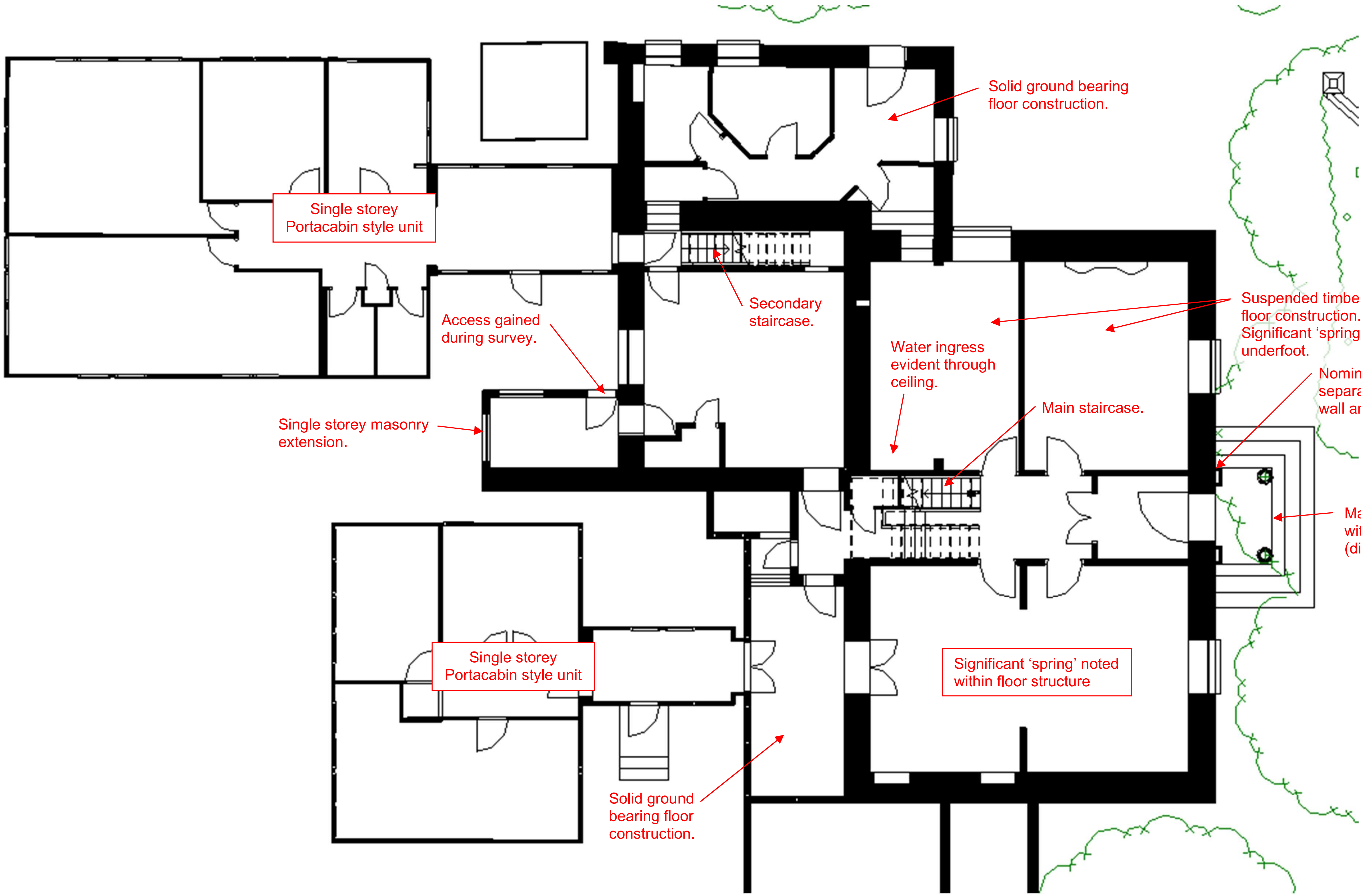

Figure 41: White House annotated ground floor plan

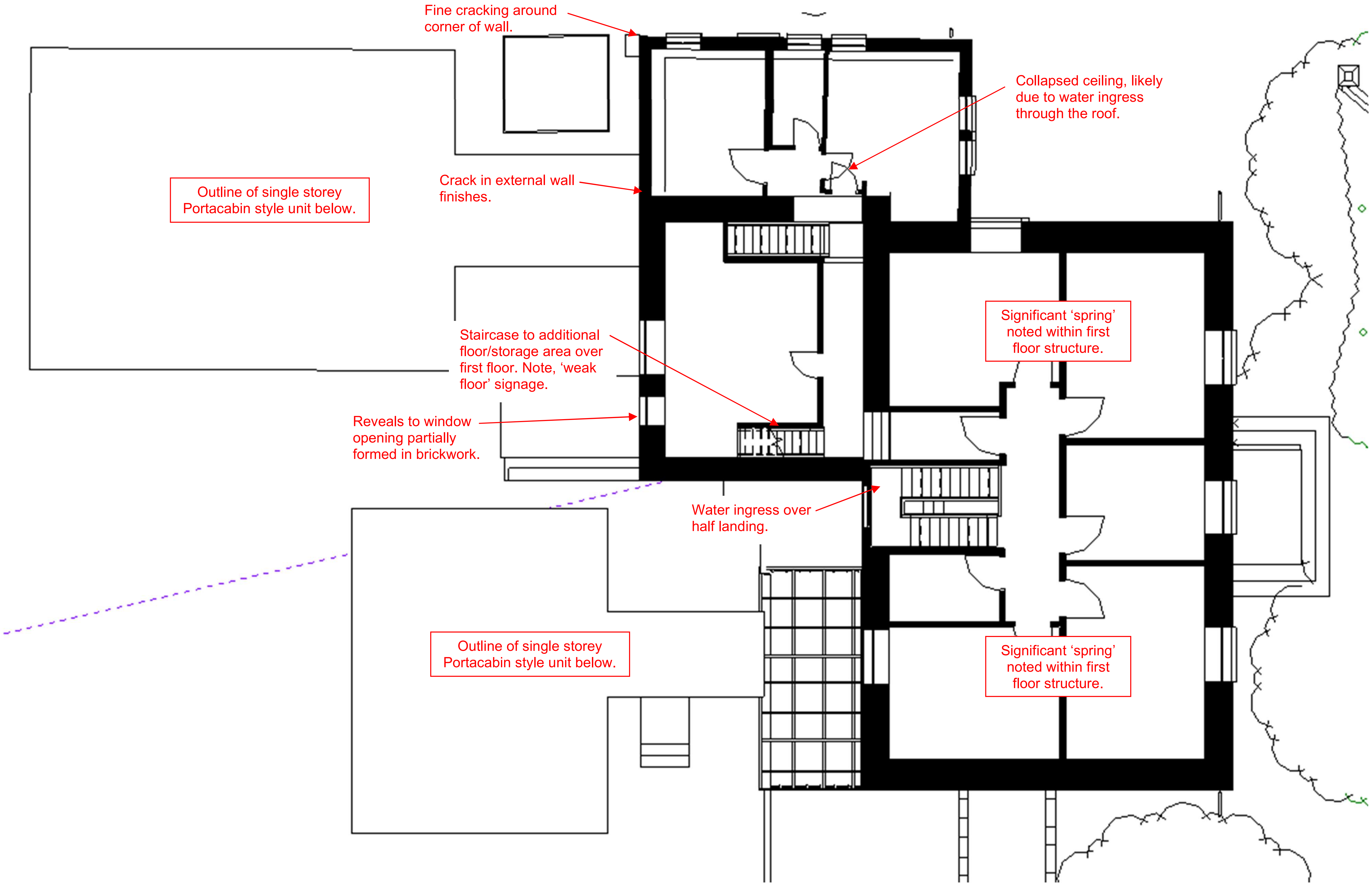

Figure 42: White House annotated first floor plan

3.3 Conclusions

At the time of this survey the White House building was found to have fallen into a state of disrepair, with a variety of serviceability and structural issues. Nonetheless, the majority of the issues noted were found internally, and the overall external envelope of the structure generally remains sound.

3.3.1 Ground Floor

The ground floor was covered with finishes at the time of survey, preventing detailed inspection. Based on response underfoot, the floor construction clearly varies between ground bearing slabs and suspended timber floor joists.

Ground bearing floor slabs appear serviceable for the current building use and no structural defects were noted.

Suspended timber floors are generally excitable underfoot and are like to be suffering from deterioration. The movement observed is considered to be beyond serviceable limits for the building usage.

3.3.2 First Floor

The two timber staircase appear to be in sound condition, however there may be underlying issues developing within the timberwork as a result of the water ingress and dampness within the building.

The suspended timber first floor structure was covered with finishes during survey and thus direct inspection of the timber was not possible. Various areas of excessive ‘spring’ underfoot were noted throughout the floor plan. This movement is likely a result of deterioration of the floor joists due to dampness and water ingress. Removal of the floor finishes and detailed inspection of the floor joists by a timber specialist would confirm any issues present.

It should be noted that issues arising from dampness and water ingress will worsen if left unresolved.

3.3.3 Roof

Inspection of the roof structure was limited. Significant water ingress was noted internally and is likely a result of broken or slipped tiles, and blocked or poor condition valley gutters.

The water ingress has significantly deteriorated the first floor ceiling structure and is likely to have instigated wet rot within the roof timberwork. The extent of this will not be known until the roof finishes are removed to allow proper access and inspection by a timber specialist.

It should be noted that the effects of water ingress will continue to deteriorate the structure until these issues are remediated.

3.3.4 Walls

The external walls of the building were found to be in fair condition. Evidence of historic alterations were noted throughout the rear elevations. These alterations are generally of poor quality and are not in keeping with the original building materials or architectural vernacular.

Various instances of fine vertical cracking were noted within the stucco render finish to the front and side elevations of the building. These cracks are generally considered superficial and are not of significant structural concern at this time.

The more significant cracking observed between the rendered masonry and stonework on the rear elevation could be a result of a change in wall construction. This cracking may be indicative of underlying structural issues and will require further review to establish if structural remedial works are required.

Some minor deterioration of the external mortar joints between stones was noted.

3.4 Recommendations

3.4.1 Ground Floor

The suspended timber floors require further review to establish the extent of remedial works required. The existing floor finishes should be removed to allow detailed inspection of the structural timberwork by a timber specialist. Any timber suffering from defects should be repaired or replaced as required in accordance with the timber specialist's recommendations.

3.4.2 First Floor

Floor finishes should be removed to allow detailed inspection of the first floor structural timberwork by a timber specialist. Particular attention should be given to areas of water ingress and to joist bearings within the stone walls. Any timber suffering from defects should be repaired or replaced as required in accordance with the timber specialist's recommendations.

If the proposed remediation works involve the removal of large areas of first floor structure, temporary support of the existing walls may be required. All temporary works should be designed and specified by a specialist temporary works engineer.

3.4.3 Roof

Due to the extent of water ingress within the building, it is recommended that the roof covering is replaced at the earliest opportunity. During this process the roof timberwork should be inspected by a timber specialist. Any timber elements suffering from deterioration should be replaced or repaired in accordance with the timber specialist's recommendations.

All valley gutters and downpipes should be cleaned of debris regularly. The condition of gutters and their flashings should be inspected during the roof repair works and any defects should be made good or gutters replaced as necessary.

3.4.4 Walls

It is recommended that all areas of spalling or missing mortar joints are carefully repointed throughout the exposed stone building elevations. These repair works should be completed sympathetically using a hydraulic lime-based mortar with recessed joints.

Fine and hairline cracking noted within the render is not of structural concern and may be repaired within the wall finishes.

The crack on the rear elevation between the rendered masonry and exposed stone should be monitored using proprietary 'Tell Tale' crack gauges to establish if the movement is historic or progressive. The crack gauges should be installed at the earliest opportunity and monitored for a minimum period of 12 months. If the movement is not progressive, the crack may be repaired within the wall finishes. If the movement is progressive, remedial works are recommended in the form of Helical tie bars installed across the crack, and finishes made good.

Signed: Sam Gardiner **Date:** 03th April 2024

Airey & Coles Consulting Engineers