

Our Ref: 200-493 Report R3

7th January 2024

The Great Oakley Community Hub.
The Maybush Inn.
Great Oakley
Essex
C015 5EP

Fao – Mr. T. Richmond.

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Dear Terry

Re: Structural Inspection of The Red House, Great Oakley, Essex C012 5AQ

1.0 Introduction & Work Undertaken.

Proposals to convert and extend the Redhouse to provide affordable accommodation for the community have been granted planning approval. Although the building is in serious disrepair, the planners required the scheme to retain most of the existing building even though the building is not listed.

Further investigations and design have been undertaken to establish the site's soil conditions and determine what foundations are required for the new scheme. These have enabled scheme design drawings to be issued to contractors for budget pricing.

We understand that the quotations you received confirmed that the proposals were not financially affordable and replacing the building appeared to be the only viable option.

In light of the above, we understand that the scheme has been given further consideration and a structural assessment has been requested to examine the structural viability of part retention or complete replacement. It is in this regard that the following report is provided.

We have undertaken a visual structural inspection of the property and provided this report. Our commission has been undertaken in accordance with the terms, conditions and limitations set out in Section 8.0 of this report.

It is not the intention or purpose of this report to catalogue every defect or area of damage, but to provide an overview of the general apparent structural condition of the building.

Our report is only based on what was visible and evident at the time of our inspection.

2.0 General description of the building.

The Red House is a two-storey building, situated on the corner of Farm Road and Harwich Road (B1414). The building is believed to be well over one hundred years old and has previously been used for residential and retail use but has been vacant for some years.

The building comprises of traditional masonry load bearing walls supporting timber floor and roof constructions. Some timber wall construction is also evident.

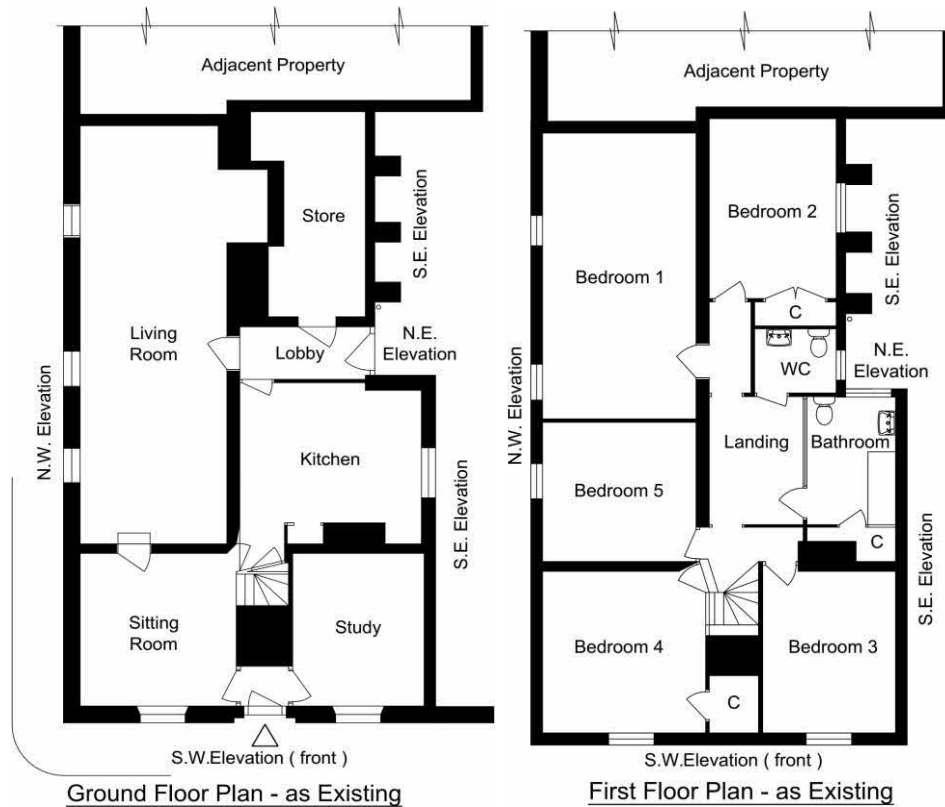
We understand that the property is located within a conservation area but that it is not a listed building.

The dwelling is at the end of a terrace of similar properties on Harwich Road (B1414). We understand the building was also once joined to properties along Farm Road, which formed a terrace with the Maybush Inn.

At the time of our inspection the building was empty apart from some areas covered in building debris. The building is pictured in photograph 1 below.



Photograph 1
Showing front (south westerly facing) elevation.



Ground & First floor plans
Showing layout and arrangement of the building

3.0 General findings / observations.

The location of the rooms and elevations noted below are illustrated in the plans in section 2.0 above. The photographs provided were taken over various visits to the building.

3.1 External Inspection.

Our inspections were undertaken from ground level, our findings are detailed below:

Southeastern Elevation.

External buttress piers are evident to the wall at the rear of section of this elevation. This section of wall appears to be significantly bowing outward from the building. The buttress piers appear to have been constructed as a historic addition to the building, presumably to resist the outward movement of the wall. Cracking and movement is evident in the side and front faces of these piers, and the external wall appears to have moved further. See Photographs 2, 3A & 3B.

The windows and door openings positioned at the corner junction of this wall and the short wall on the Northeastern elevation, result in little or no lateral support being afforded to main southeastern flank wall.

A Pattress plate is evident to the external face of the wall, located between two of the buttress piers.



Photograph 2
Showing openings in walls on & Southeast Elevations.



Photograph 3A & 3B
Showing damage to buttresses in Southeast Elevation

Historic wall damage and repairs are evident to middle section of the Southeastern wall. Distortion and movement are evident above the door at this location. The timber lintel over the door appears to be rotten and suffered decay. A notch is evident in the bottom of the lintel. See Photograph 4.



Photograph 4

Showing Distortion and historic damage around window on Southeast elevation



Photograph 5A

Showing bowed gable side wall on Southeast Elevation



Photograph 5B
Showing partially collapsed chimney in valley.

The wall at the front section of the southeastern elevation, consists of a double gable flank wall with one ground floor window. This section of wall appears bowed significantly and appears to be leaning outward from the building. (This is based on visual judgement alone.) A 3mm vertical crack is evident located centrally in the wall below roof valley. Cracking is also evident to the top of the wall. See Photograph 5A.

The chimney located in the valley on the front section of the building has partially collapsed, debris from this is evident internally, and part of the chimney is visible from the Farm Road. See Photograph 5B.



Photograph 6
Showing wall damage on Northeast Elevation

Northeastern Elevation.

Cracking is evident between the top of the door and window opening on this elevation.

Whilst we were unable to accurately measure the widths of these cracks, we estimated they were in the order of 4 to 6mm wide.

The cracking appears to be vertical and stepped diagonal in profile and would appear to be the result of structural movement. See Photograph 6 above.



Photograph 7A

Showing damaged brickwork at eaves level on Northwest elevation

Northwestern Elevation.

Various cracks are evident to the external render on this wall. In the main these cracks appear to be minor up to 1mm in width. In many places the cracks have been painted over in the past but have since re-appeared. There appear to be several locations where distortion is evident to the facing brickwork at eaves level.

This wall appears to be bowed and leaning outward from the building. (This is based on visual judgement). Horizontal cracking is evident in the render where the wall is bulging. See Photographs 7A & 7B



Photograph 7B & 7C
Showing leaning and bulging external wall.

Southwestern Elevation.



Photograph 7B
Showing distortion of the main front Chimney Stack

Distortion of the chimney stack is evident on this aspect. Sections of the stack appear to have twisted and areas of protruding brickwork are evident where the masonry has shifted. See Photograph 7B.

Cracking is evident in the external render above the window openings.

Internal Inspection.

The following observations were noted during our visual inspection:

First Floor

Bedroom 1

The ceiling above this room had been removed at the time of our inspection.

There were numerous areas where rot and decay were evident to the existing timber roof structure. See Photographs 8 & 9.

Some of the roof timbers appear to have been replaced with newer timber.

The timbers to the roof structure appear undersized relative to their span and loading.

The floor in this room is at two separate levels and a small step is located between each. When undertaking a simple “heel – drop” test, the higher section of floor appeared to be relatively stiff whilst the lower section was live, with significant bounce noticeable.



Photograph 8
Showing decaying rafters.



Photograph 9
Showing decaying rafters

Bedroom 2

The roof structure above this room appeared to be in poor condition. We noted several locations where day light was evident through holes in the roof coverings.

The timber roof structure above this room is a “cut & pitch” raised collar tie roof. This means the ceiling rafters are raised above the top of wall level and span between the rafters each side. See photograph 10.

Signs of historic movement where evident to the external wall.

The floor in this room appeared to have a slight bounce.



Photograph 10
Showing raised tie roof.

Bedroom 3

The ceiling joists and roof structure were evident above this room, at the time of our inspection. The ceiling joists span between the gable wall and the internal wall, perpendicular to the roof rafters above. No timbers appeared evident tying the rafters other than a collar at high level. This collar appeared to be suffering from decay and rot. See Photograph 11A.

The chimney stack situated in the roof valley above the wall between this room and the bathroom has partially collapsed and this has caused water to ingress down this wall. Cracking is also evident. See Photograph 11B.



Photograph 11 A
Showing roof over Bedroom 3 & high level collar tie.



Photograph 11 B
Showing wall cracking and moisture Ingress

Bedroom 4

No ceiling joists are evident above this room. The roof rafters appear to be rotten and notched in locations and appear to be sagging significantly.

The only tie measures apparent to prevent roof spread are some intermittent timber collar ties, and these appeared to be suffering from decay.

Rot and decay were evident to the timbers near the hips.

There were several locations where the roof was missing.

See Photographs 12 & 13



Photograph 12
Showing missing felt and rotten timbers.



Photograph 13
Showing sagging rafters & collars

Bedroom 5

When undertaking a simple “heel – drop” test, the floor in this room appeared to be live, with significant bounce noticeable, with very little impact.

The wall plates were exposed in this room and where completely rotten in places.

Areas of masonry have become loose at wall plate level.

See Photographs 14 & 15.

The timber valley boards and wall plates above the hallway wall, were completely rotten. It was easy to remove sections of timber from the wall plate by hand, and the integrity of this section was found to be lost.

See Photographs 16 & 17.

Signs of rot were evident to the roof structure above this room.

Signs of dampness were evident on the walls.

Where the masonry was exposed within this room it was found to be soft.

The stud partition separating this room from Bedroom 1 adjacent, appears to be supporting the roof. This partition appears to be built off the timber first floor.



Photograph 14
Showing rotten wall plate.



Photograph 15
Showing rotten wall plate and loose masonry.



Photograph 16
Showing rotten valley boards and wall plate.



Photograph 17
Showing rotten valley boards and wall plate.

Hallway / landing

Distortion and movement are evident to the timber roof and ceiling structure above this room. Many of the roof and ceiling timbers appear to be undersized and rotten.

The internal walls in this room appear to be supporting the ceiling structure and the roof. These walls appear to be built off and supported by the first floor.

The floor in the hallway at the top of the stairs appears potentially unsafe. The floorboards appear to have lifted and bowed due to moisture ingress. See Photographs 18A & 18B.



Photograph 18A.
Showing area where
Floor appears potentially
Unsafe.



Photograph 18B.
Showing view on underside of floor joists and boards.

Bathroom

The ceiling joists over this room span perpendicular to the rafters above, with no provision evident to laterally restrain to top of the rear wall. The ceiling joists are supported on a timber beam, but both are located above the top of wall level.

The ceiling timbers appeared to be suffering from some decay.



Photograph 19
Showing ceiling structure above bathroom.

W.C.

We could not gain safe access into this room due to the amount of debris located on the floor and concerns regarding the load capacity / safety of the floor.

3.1.1 Ground Floor

Sitting Room

The floor joists in this room span front to back and are supported on a central down-stand timber beam. Many of the joists appear to have insufficient bearing on the beam and are suffering from rot. Some appear to have signs of insect infestation; this may be historic.

The lintel over the window in the front wall appears to be undersized and sagging.

See Photographs 20, 21A & 21B.



Photograph 20A
Showing joists spanning over sitting room.



Photograph 20B
Showing rotten joists over sitting room



Photograph 21 A
Showing lintel over front window in sitting room.



Photograph 21 B
Showing joists with insufficient bearing on spine bressummer beam.

Living room

The floor joists spanning over this room appear to be small and undersized. These joists span between timber beams which span perpendicularly across the room, between the external and internal walls. Some of these floor joists appear to have been historically strengthened with the introduction of sister joists / additional timbers nailed to the side of the joists. Locations were noted where the joists had signs of insect infestation. Many of the joists have been excessively notched onto the supporting beams.

See Photographs 22A, 22B & 23.



Photograph 22 A

Showing existing floor joist over living room & newer sister joists.



Photograph 22 B

Showing existing rotten and undersized floor joists which excessive notches onto beam.



Photograph 23
Showing floor joists and timber beams over living room.

The timber beams that span across this room and support the floor joists appear undersized. The headroom in this room is limited.

A crack is evident centrally on the ground floor of this room. We the ground floor appears to be of concrete construction, and we assume this is ground bearing.

Study

The masonry to the rear and side wall to this room was exposed. Timbers were evident embedded in the brickwork to both walls. These timbers appeared to be rotten. The side wall of this room is the gable external wall of the house. The timbers embedded in this wall have deteriorated very badly and the timber is friable in places and can be removed easily by hand. In some places these timbers have been lost and left a deep chase in the wall. See Photographs 24A , 25 & 26.

The bond to the brickwork on the rear (internal) wall in this room is very poor. There are numerous gaps between the bricks where mortar has been lost. The original mortar appears to be a of soft lime composition. In some areas the wall has been re pointed with a more modern, harder sand cement mortar. Following the collapse of the chimney, water ingress into the building and has saturated the walls, percolating through the masonry, and further weakening the poorly bonded brickwork. See Photographs 24B.

A vertical gap is evident between the original 18th century gable wall and the internal wall. No toothing of the masonry around the corner of these walls is evident. See Photograph 27.



Photograph 24 A
Showing timbers embedded in rear internal study wall & poorly bonded masonry



Photograph 24 B
Later photo of same wall shown in Photo 24 A above – showing wall saturated after chimney collapse.



Photograph 25
Showing rotted & disintegrated timber in Study side external wall & gap left in wall.



Photograph 26
Showing rotten embedded timber in external side wall in Study



Photograph 27
Showing de-bonded masonry at internal wall junction

The first-floor construction evident above this room is similar in arrangement to that noted above, in the sitting room. There are signs of damp and insect infestation in areas of the joists and the central timber primary beam.



Photograph 29
Showing floor joists and central beam.

Kitchen

The first-floor construction evident spanning over this room, appears to be in very bad condition. There are numerous locations where the timbers have suffered significant deterioration and loss of section due to rot and timber infestation.

See Photographs 30, 31, 32, 33, 34 & 35.

In various locations the existing first floor joists and beams have been excessively notched to accommodate pipes and services. It should be noted that these timbers appeared small (relative to their span and likely loading) without any further reduction in size. The size and position of some of these notches is such that they must result in a very significant loss of strength and load carrying capacity to the member.

See Photographs 31 & 34.

The window evident on the north-western / rear wall of this room is located directly adjacent to the external wall. There is no buttress / return providing lateral support to the end of the external wall. See Photograph 35.



Photograph 30
Showing badly deteriorated joist and timber beam over kitchen



Photograph 31
Showing deep notch in timber beam
that supports the floor over the kitchen.



Photograph 32
Showing rotten floor joists over kitchen.



Photograph 33
Showing rotten floor joists over kitchen & no buttress return to external wall at window.



Photograph 34
Showing deep notched mid span in floor joists.



Photograph 35
Showing rotten floor joists and boards over kitchen.

5.0 Discussion of Evidence and overview.

Generally, the building appears to have been deteriorating over some time, due to moisture and water ingress, and structural movement and inadequacy.

The condition and configuration of the roof is such that it appears to be finely balanced with little restraint afforded to the supporting external walls. Many areas of the roof are vaulted without ceiling joists or binders evident to tie the bottom of the rafters. This will have likely led to some roof spread and caused lateral movement of the external walls.

The roof timbers appear to be undersized in many locations with no redundancy to cater for any loss of section, without deformation and distress.

The condition of the roof is such that it has surpassed serviceable limits. Rot and decay are prevalent to degrees which indicate that replacement is required. Many of the roof members are undersized and their deteriorating condition is exacerbating the structural fragility of the roof structure.

The roof appears to have various holes and locations of water ingress. We suspect that the roof drainage is ineffective or blocked.

One of the chimney stacks toward the front of the building has recently collapsed into the roof. This has caused debris to collapse into the building.

The timber wall plates are badly rotten and have perished in many places at the eaves and valleys.

Moisture ingress from the roof has caused deterioration to the walls and structure below.

At roof plate level, there were various locations where the masonry was soft, unbonded and friable by hand.

Many of the outside walls are leaning and or /bulging with no obvious means of restraint. We suspect that the stability of some sections of the wall may be finely balanced.

The lean of the gable wall is such that the ongoing stability of this wall is questionable. The erosion and deterioration of the timbers embedded in the inside face of the wall has created points of weakness that are likely to act as a hinge in the wall and greatly limit its ability to span vertically.

The rear portion of the Southeastern external wall has seen buttress piers added historically to prevent this wall moving outward. The wall appears to have a significant lean. Internally the floors span front to back, so they do not offer any lateral restraint to this wall. The roof in bedroom two is a raised collar tie roof and this will have likely caused some lateral loading at the top of the wall as the roof deflects under vertical load.

The first-floor joists and beams above the study and sitting room appear undersized and are rotten in some locations, but it is conceivable that these could be strengthened and treated/repared although this may be problematic considering the limited headroom. In many of the rooms on the first floor, there was a very noticeable floor bounce, when walking or undertaking heel drops on the floor.

The first-floor joists over the living room are very small and would not usually be considered adequate for use as floor joists. The strengthening of these joists does not appear to be adequate. Some of the joists above the living room appear to have signs of insect infestation. We are not sure if this is due to the current or historic infestation.

The timber beams spanning over the living room, supporting the first floor appear to be undersized. This is based on judgement; we have not checked this by calculation.

The first-floor timber structure above the kitchen is in very poor condition and has surpassed its serviceable limits.

The living room is a long room without any internal walls or visible provisions to buttress the external wall on the Northwestern elevation. An outward lean and bulge are evident to this wall externally, horizontal cracking is also evident to render possibly caused by tension due to the bulge in the wall.

Whilst the defects noted are not uncommon for properties of this age, their prevalence and severity at the Redhouse has left the building seriously compromised such that its ongoing stability is now questionable. It is difficult to envisage how the building could be repaired in its current condition, and any such undertaking is likely to be at high risk for instability.

As previously mentioned, the Redhouse is joined to a terrace of houses of similar age and construction, along Harwich Road. Any works to be undertaken at the Redhouse would need special consideration to ensure that these do not undermine, compromise, or endanger the properties adjacent.

A geotechnical and foundation investigation were conducted in August 2022. This revealed that the existing building, as expected, is construction on little or no foundation. The soil conditions were found to comprise of weak, loose, and disturbed soils down to around 2.3 meters where firmer Sandy Silty clay was encountered. Any scheme of involving the retention of the building would likely require relatively deep foundations for the new and replacement elements, and this would also result in the requirement to underpin much of the existing structure, deem viable for retention. The execution of such works would be very difficult and in our opinion of high risk in terms of the stability of the existing structure and those adjacent.



Photograph 36

Showing the Redhouse and the adjacent properties on Harwich Road.

6.0 Conclusion

The building is in a very poor condition. In many areas the structure has surpassed serviceable limits. In the areas of the building which are salvageable, the structure and its foundations need considerable repair and strengthening.

We do not believe that a “piece by piece” scheme of replacement / strengthening works is practicable within the existing structure. Whilst schemes and measures can be considered to cater for the myriad structural defects on a case-by-case basis, the overall level of the intervention required to the existing building would be significant and these works in our opinion would be difficult to undertake (given the limited space) and would high risk in terms of safety. The condition of the existing building is such that it appears to be very fragile, and we believe any works which cause significant disturbance or movement to the structure could lead to instability.

There are various walls that need replacement, and these would need to be installed on relatively deep foundations due to the poor ground conditions. (As noted in the soil investigation.) This would result in the requirement to underpin any walls that are to be retained on site as well as the walls to the adjacent historic buildings that are close to the site, risking disturbance / damage.

We have considered the viability of retaining the external façade on the Farm Road and Harwich Road elevations and replacing the structure behind. This would require temporary a structural framework would need to be constructed outside of the building and this would require the partial closure of Farm Road and Harwich Road. These temporary works would be combined with some internal scaffolding and framework to support the walls which are to be retained and strengthened. The implication of such work is very likely to be hazardous and high risk. The retained facades would still need to be largely replaced due to the poor condition of the masonry, and substantial additional structure would need to be installed to laterally restrain these walls in the long term. The walls would need to be underpinned as otherwise they would likely be undermined by the foundations for the new walls and structure. This could cause instability and movement of the historic building adjacent, which is also likely to have little or no foundations.

We are of the opinion that the existing building should be carefully dismantled and rebuilt incorporating the additions shown in the proposed scheme. From a structural engineering point of view, a re-build scheme is likely to be a far better option; it will involve considerably less structure, temporary works, and risk. The new ground works will also be much easier and safer to undertake, and no underpinning is likely to be required. This is likely to be of less risk to the adjoining historic structures.

From an environmental point of view, a re-build scheme would have little or no disruption to the surrounding community, certainly no more than normal for a construction site. The re-built construction would also be able to incorporate additional levels of insulation and renewable energy supply creating a far more efficient and environmentally friendly building, whilst safeguarding the historic buildings adjacent.

7.0 Recommendations.

We recommend that temporary works are installed to provide vertical and lateral support to the building. Areas of the first-floor structure appear to be very weak and could be or shortly become dangerous. Loose masonry from the recent chimney stack is evident resting on the existing roof structure. This could collapse further without warning and poses a significant risk to any person in our adjacent to the building.

The front chimney visible on the roof above the Southwest elevation appears to be fractured and could be or become hazardous. We recommend that works be undertaken using an external elevated platform to check the existing chimneys and remove any loose masonry. This work would need to be done by a specialist to ensure it can be undertaken safely.

We recommend that any open trial pits should be fully backfilled to prevent any moisture softening the foundation soils. Access into the building should be limited to essential access only. Access at first floor should not be permitted unless additional checks and propping is carried out to ensure the first-floor structure is safe.

The structural design of the extension and modified or rebuild existing building should be designed by a qualified structural engineer and Architectural designer to complies with planning requirements, building regulations and as such as to safeguard the buildings nearby.

Adequate "All risks" insurance cover should be maintained to provide continuous cover for the building.

8.0 Limitation of this report and terms and conditions of our engagement.

This letter report and all our inspection work to date has been undertaken in accordance with the Association of Consulting Engineers standard terms and conditions of engagement part 2 – Study for clients.

The following report should not be considered as a comprehensive appraisal of the structural condition of the property, it deals solely with structural matters relating to those stated above and immediately apparent during our inspection.

No attempt was made to inspect any parts of the structure which were not visible or were hidden or inaccessible. It is possible conditions exist which have not been identified herein.

Our commission excludes providing any advice relating to contamination or asbestos and/or any non-structural engineering matters. Our commission does not include for the assessment of any environmental issues, i.e. contamination, flood risk assessment, conservation issues etc. and such are outside of our remit and responsibility.

This report is personal to the client, confidential, non-assignable and written with no admission of liability to any third party. No rights are offered, purported, or conferred to any third parties. This report should not be reproduced, except in full, and only with our permission. Our client is the Great Oakley community Hub Ltd

The details and outline summary of envisaged required works is provided herein are solely for conceptual purposes and are all to be confirmed. No details in this report in any way provide a final assessment or design and should not be relied on or used for any procurement, sales, costing, construction, or for any other purpose.

We are not qualified to advise on planning or conservation matters. We recommend however that no work is commenced or procured until planning permission has been granted and any pre-commencement conditions have been cleared. Specific agreement is to be obtained from the local authority prior to the removal or demolition of any construction.

We trust the above is clear, but if you have any queries or need to discuss any matters, please don't hesitate to contact us.

Yours Faithfully

Davies Burton & Sweetlove Ltd