Former Hotel Felix, Cambridge
Cassel Hotels (Cambridge) Ltd
Mrs Kate Hannelly Brown
January 2023
APP/W0530/W/22/3307903

BIDWELLS

REBUTTAL PROOF OF EVIDENCE

KATE HANNELLY BROWN

BSC(HONS) MSC IHBC

1.0 Introduction

1.1 In this rebuttal proof of evidence, I seek to respond to Ms Gail Broom's proof of evidence on behalf of the Council.

1.2 References to paragraph numbers are to those used in Ms Broom's proof unless otherwise stated.

2.0 Rebuttal comments

2.1 Para 4.3: Mr Hurst did not initially identify the building as a non-designated asset during the pre-application stage but did go on to identify it as such after the application was made. I do not contest the status of the building as a non-designated heritage asset, and I prepared my evidence on this basis.

2.2 Para 4.7: The Appellant has never been suggested that the building is devoid of significance or interest due to the issuing of the Certificate of Immunity. It is, however, clear from the issuing of the Certificate that the building does not hold special historic or architectural interest.

2.3 Para 7.1: When the main parties were seeking to agree the Statement of Common Ground, the Appellant asked the Council to agree that the building is "typical" of its type, particularly as it has been highlighted as such in the responses to the consultation on the application. However, the Council resisted this and refused to agree that the building was a "typical" example of its type within the Statement of Common Ground. It is therefore fair and relevant to note that in this first paragraph of Ms Broom's assessment of the significance of the asset in her proof, she confirms that the building is, indeed, "*typical* of those built for the professional classes of flourishing cities in the mid-19th century". The Council's refusal to agree to this proposition in the Statement of Common Ground was unreasonable.

2.4 Para 8.3: Pevsner's 'Buildings of England' is a series of introductory guidebooks to the architecture of England. These guides were created by the architectural historian Sir Nikolaus Pevsner, with the first covering Cornwall, published in 1951, and the final guide, covering Staffordshire, completed in 1974. The guides are intended to set out walking tours of a local area for the reader, with a particular focus on churches and public buildings. The more significant a building, the more information is provided. The original guide for Cambridgeshire was published in 1954, with an updated version arriving in 1970. This 1970 version of the Cambridgeshire guide, written by Pevsner himself, did not include an entry for the appeal site. It was not until the later 2015 edition, which was updated by another author, that the site was mentioned at all. This mention of the site in the third edition of the guide is short. It does not go into any real detail regarding the building or its history, as is often the case with more significant buildings within the book. The entry describes the building as Jacobean-gabled. I should make clear that "Jacobean" is a term usually reserved for 16th century architecture. I interpret the reference to "Jacobean" here as referring to the building being inspired by characteristics of Jacobean architecture, rather than being Jacobean itself.

2.5 Para 8.5: The 21st century extension is constructed to a good standard, and I do not suggest that it detracts from the façade. However, it does fundamentally alter the historic and intended design of this principal elevation as conceived by Charles Lestourgeon, which has an impact on the understanding of the building.

2.6 Para 8.6: The various extensions do indeed alter the legibility of the site. Although the principal elevation may be discernible when you are physically within the courtyard, historically this was never a courtyard and has been created by the introduction of the later wings. Prior to these having been constructed, the entrance and hierarchy of building would have been clear from any location within the site.

2.7 Para 8.8: The Appellant has not suggested that the quality of the internal spaces detracts from the quality of the external elevations. However, the quality and significance of the building must be considered as a whole, rather than cherry-picking certain elements.

2.8 Paras 9.1 and 9.2: Ms Broom acknowledges that the building is not a rare type within Cambridge, but she considers that it is "not common in the Girton area". This comment confirms that the loss of the building should not be regarded as having any significance in the context of Cambridge (the city). However, Ms Broom then states that a villa set within open land is unusual in Cambridge, contradicting her previous statement by inviting comparison with buildings in Cambridge. As the villa is outside the city boundary, there was inherently more space available to it when built, and the opportunity was taken to set the building more centrally within the site. This is a common approach to buildings which sit outside a city centre and is not itself of any particular significance or interest, in terms of "architectural style", as Ms Broom claims.

2.9 Para 9.1: I strongly contest the suggestion that the "form and detailing" of the building are of high quality. The building has undergone significant alterations to its form over time, including the front elevation being extended to the left-hand side which obscures the original and intended asymmetrical appearance of this elevation. This has resulted in not only a change to the form and appearance but has also resulted in fabric loss. This elevation does retain a Dutch gable, iron canopy and paired windows which do create a pleasant composition but are all typical of the period.

2.10 In addition, the side elevations have seen alterations and additions to them, including an additional chimney stack to the western side. Even the rear elevation, which has been least altered, is seen in the context of two poor quality extensions to either side. The main central element of this rear elevation does have paired windows, a Dutch gable and a central bowed façade, all of which I accept do add positively to the appearance of the building. However, in my judgment, they are features which are of a good quality rather than a high quality. A high-quality example of a mid/late 19th century, Jacobean-inspired building would be 3 Sidney Street, Cambridge. This building is Grade II listed and is clearly of a high quality in materiality, design and form. Read in this context, Ms Broom's suggestion that the form and detailing of the building on the appeal site would be of a "high quality" is clearly mistaken, in my view.

Figure 1 - 3 Sidney Street (Source: Historic England)

2.11 Para 10.1: Charles Lestourgeon is identified as a Fellow of St John's College. There have historically been a very large number of Fellows of Cambridge colleges. This factor alone, therefore, would not add particular weight to the assessment of the building's significance.

2.12 Para 10.2: I accept that Mr Lestourgeon would be of some interest locally given his achievements as a surgeon. He was clearly a person of distinction who had a successful career. However, in a city area that has seen many persons of distinction over the centuries, his previous occupation of part of the building would not, alone, contribute materially to its significance in heritage terms. Mr Lestourgeon constructed the building for his own needs, including a glasshouse along the south-east side which is thought to have been inspired by his interest in botany and silviculture (the care of forests). However, this glasshouse was removed in the 1970s, thereby severing a meaningful and tangible link with Mr Lestourgeon.

2.13 Para 10.3: Ms Broom refers to the politican Sir John Eldon Gorst, who moved to Howe's Close in late 1895. The 1901 Census confirms he and his family were at '3 Howes Close' at that time. However, the book, '*A life of Sir John Eldon Gorst'*, by Archie Hunter, states that the family moved to Cricket Hill House in Hampshire in the autumn of 1902, a fact further confirmed by the 1904 edition of Kelly's Directory. As such, although Sir John is a person of national interest, he lived in the property for less than 7 years. Accordingly, the association between the building and Sir John should be given no more than limited weight in the assessment of significance.

2.14 Para 11.1: Ms Broom concludes that the building has a "*medium/moderate level of significance*". In my respectful judgment, this assessment of the level of significance does not align with either the architectural or historic value of the building. It is evident that the building is of some architectural interest, albeit its features were typically found in buildings of its time, and it has some historic interest due to its association with Charles Lestourgeon and its community uses.

However, the building has been significantly impacted through alteration and extension and the removal of key features such as the glasshouse. As such, the better view is that the building has a low level of heritage interest. To be clear, this does not mean that it is devoid of interest, but the level of interest it has is limited.

2.15 Para 11.4: It is correct that the structural inspection report was omitted from the appendices to the Heritage Statement submitted with the planning application. This was an administrative omission which I now rectify by appending the report to this rebuttal proof (see Rebuttal Appendix 1). For completeness, I also append a more recent, more detailed structural inspection report that the Appellant commissioned in relation to the building (see Rebuttal Appendix 2). It is sufficient to highlight the final two paragraphs of the more recent report:

> *"If the substantial remedial works were to be carried out on the property, the existing building would, on completion, only provide five usable rooms at ground floor and six rooms at first floor. It is debatable as to whether the second-floor room could serve any functional purpose in isolation due to restrictions on access.*
>
> *Whilst it would be possible to address the structural issues the building is currently experiencing, it is unlikely to be an economical and sustainable proposition to do so to achieve the limited and compromised amount of usable area."*

APPENDIX 1
REPORT ON STRUCTURAL INSPECTION (STRUCTURAL ENGINEERS CAMBRIDGE LTD) SEPTEMBER 2019

Structural Engineers Cambridge Ltd

Report on Structural Inspection

at

Hotel Felix
Cambridge

Job No. 19-563
September 2019

EXECUTIVE SUMMARY

This report covers an Engineer's inspection of a property for the purpose of identifying and assessing structural defects.

It concludes that the property is in fair structural condition but requires further intrusive investigation and/or long-term monitoring to diagnose the true cause of the observed defects and provide a suitable basis for recommending remedial action.

Authorised by:

Charles Tallack

Charles Tallack B.Eng(Hons), C.Eng, MIStructE, MIMechE, ACGI

Structural Engineers Cambridge Limited
The White Horse
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Cambridge CB22 3EF

INTRODUCTION

At the request of Simon Woods on behalf of Cassel Hotels (Cambridge) Ltd, I visited the above address on 20th September 2019 in order to inspect and comment on the structural integrity of the building.

A visual examination of the exterior was made from ground level, and the interior was partially viewed on all storeys. The roof structure was not inspected at this time.

No concealed parts of the building were opened up for inspection at this time. Unless specifically described in this report, no elements concealed from view or inaccessible for inspection can be considered free from defect or decay.

This report does not constitute a full building survey and specifically excludes the following:

a) The decorative condition of the property
b) The condition of the property with respect to dampness, dry rot, timber infestation and the like, unless structurally relevant
c) The condition of services
d) The condition of the roof, floor, wall and ceiling coverings
e) The location of the property, its value and other aspects such as searches, boundaries etc.

No monitoring, long term investigation, testing of materials of construction or calculations have been carried out at this stage.

This report is prepared solely for the named client and their professional advisers and no liability is extended to any other person who may seek to rely on it.

OBSERVATIONS

The property in question is a hotel standing in landscaped gardens in the north-west suburb of the city of Cambridge. It is understood to have been originally constructed as a dwelling-house in the mid-19th Century for a surgeon at Addenbrooke's hospital before being owned by Cambridgeshire County Council, prior to its purchase and conversion to a hotel.

The building was significantly extended in 2002, which involved the demolition and replacement of a range of 20th Century annexes to the original building.

The completion of the frontage of the building was realised by the addition of a two-storey infill extension to the left side of the entrance on the north-east elevation.

The original house is of typical construction for its age, with solid brick external walls under a pitched slate-tiled roof. The infill extension was constructed in a matching style, while the range of single-storey extensions to the south-east and north-east are constructed in a modern fashion with brick-faced cavity walls under a flat roof.

The internal walls are of plastered brick, with some non-loadbearing partitions of timber studwork on the upper storeys.

The roof structure was not inspected but is expected to be a traditional site-cut timber carcase with softwood rafters coupled at eaves level by the ceiling joists and purlins braced with collars and struts. This would rely on the internal loadbearing wall for support as well as the outside walls.

The upper floors are of timber joisted construction, while the ground floor was largely concealed but appears to comprise timber construction in some areas and suspended reinforced concrete in others.

There was a basement storey beneath much of the original building, accommodating the kitchens and utility areas, store and plant rooms and a lower foyer giving access to toilets and cloakrooms.

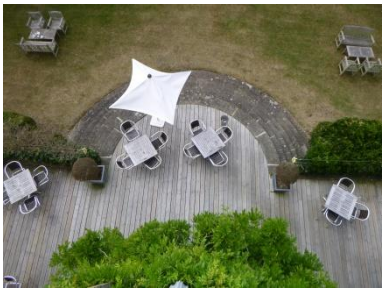
Although the foundations were not inspected, it is likely that these will be a stepped brick footing at a relatively shallow depth (750 to 900mm) except in the basement areas, where the founding depth will be around 3 metres below ground level. On a suitably firm stratum this type of foundation is normally satisfactory, but may not be resistant to movement or local weakening of the soil due to changes in the moisture content of the soil.

From published geological maps[1], the subsoil in the locality is identified as Gault Clay, which has a high plasticity index, giving it a tendency to shrink and swell in response to changes in moisture content. Consequently, changes brought about by seasonal and climatic variations, as well as the growth of trees in the vicinity or leakage from drains, can influence the behaviour of building foundations.

This is not directly related to the physical growth of the roots but due to the transpiration of water via the roots, which sets up a zone of desiccated soil which may extend many metres into the ground and beyond the range of visible roots. On the eventual death or removal of the trees, the moisture content of the clay will recover over a period of seasons, causing a reverse movement and potentially further damage to the building.

There are a number of mature trees arranged in a crescent around the lawn to the south-west of the building, approximately 25 metres distant from the centre of the semi-circular terrace.

A noted feature of the grounds is the very large Wellingtonia tree, approximately 17 metres from the southern corner of the original building and 8 metres from the corner of the 2002 extension.



This tree, on account of its size, species and age, will have a high water demand and the foundations of the building will be well within its zone of influence.

Using the foundation design guide published by the NHBC (National Housebuilders' Council) in accordance with their Standards Chapter 4.2 – Building near Trees, were the building to be newly constructed, the proximity of the tree would require a foundation depth of 1 metre at 17 metres from the tree and 1.3 metres at 8 metres distant.

These calculated depths are not unduly onerous and the foundations of the original and extended parts of the building are likely to reach this depth or greater, and so the risk of damage due to ground movement caused by this tree alone would not be considered to be severe.

However, the group effect of several trees together, as well as the chronically dry climate experienced in recent years, plus the recent developments in the vicinity at the Northwest Cambridge and NIAB sites, is likely to have amplified the effects of clay shrinkage in this location.

Various damaged areas were noted on all storeys, principally towards the southern corner of the building, and including the terrace steps on the south-west side.

This brief inspection did not amount to a comprehensive damage survey, which will need to be carried out at a later date in order to create a schedule of repairs.

Examples of the observed damage include:-

In the bedroom on the attic floor, separation cracks between the gable wall and ceiling, and at the heads of the internal partition walls. Doors previously eased were found to be binding.

On the first floor, the central stairwell had a series of separation cracks along the SE-NW long axis of the stairwell, culminating in the tall arched window above the stairwell.

The internal face of this arch was cracked and a length of coving at ceiling level was in danger of falling away. This presents an immediate hazard to the occupants and will need to be taken down before it falls.

On the outside of this arch, one of the brick voussoirs of the arch had dropped, indicating that the springing points of the arch had spread apart due to one part of the building moving away from the other.

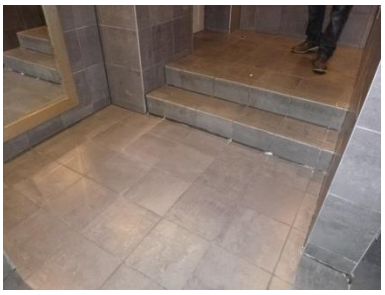
In this case, beyond the NW side of the stairwell is the 2002 infill extension, which will have been built on a new foundation following the removal of the small trees on the site (see appendix).

The function room on the SW side of the stairwell was reported to require inspection, but this was not accessible as it was in use at the time. This will need to be inspected at a later date.

On the ground floor, there was cracking in the newly-applied plasterboard lining of the wall beneath the landing of the main staircase, which had been installed as recently as November 2018 and had been repaired and redecorated in the interim.

In the lounge bar, there was widespread cracking in the ceiling and at the wall covings.

In the basement, there was less obvious damage but there were instances of cracking and minor movement at floor level and the heads of doorways.



The drainage sump positioned in the undercroft beneath the link to the south-east range of extensions was reported to have recently dried out, having habitually needed to be drained by the installed pump.

At the opposite end of the basement area, there had been a mysterious water leak, which was not attributed to leakage from any particular drain or service pipe, but will require further investigation.

The steps leading from the semi-circular terrace to the lawn on the south-east side of the building had suffered disruption from movement of their foundation, with the central part subsiding and the steps slanting towards the centre.

There were instances of cracking on the north-west face of the link extension, indicating differential movement of the foundations of different parts of the building.

All of the above will need to be catalogued in detail and compiled onto a schedule of repairs in due course.

CONCLUSIONS

The main block of the building has been affected by cracking and distortion, which is indicative of foundation movement.

The classification of the damage on the Building Research Establishment's scale is generally 2 (moderate) where the crack width does not exceed 5mm, and in some places 3 (serious), where the crack width exceeds 5mm.

The trend of movement suggests subsidence of the southern corner of the building, with a division along the length of the main stairwell. This stairwell forms an axis of weakness between the southern part of the original building and the later infill extension completing the north-east frontage of the building.

The foundation depth under the southern part of the building is shallower than other parts of the building which have the basement beneath. The southern part of the building, however, is closest to a number of mature trees including a notably large mature Wellingtonia specimen.

Consequently, the southern part of the building would be expected to be more susceptible to swelling and shrinkage of the clay subsoil in response to environmental changes in moisture content. The recent trend of dry winters and prolonged summer droughts has led to an overall rainfall deficit over the last decade or two, leading to widespread desiccation of the subsoils in the locality.

This may have been affected by large-scale development works in the North-west Cambridge and NIAB developments nearby, which have included groundworks and drainage infrastructure that may have influenced the local groundwater environment.

This report is a summary of findings made on an initial inspection, and will need to be complemented with further studies in order to make a definitive assessment.

RECOMMENDATIONS

Further studies should include a geotechnical desktop study of the site, followed by sampling of the subsoil taken from boreholes and tested in laboratory conditions. This will inform the state of desiccation of the subsoil and should allow a prediction of future settlement and the risk of further damage.

A comprehensive survey and record of damage will need to be made in order to compile a schedule of repairs.

In the meantime, urgent repairs should be put in hand to remove the loose coving from over the stairwell. Ad-hoc repairs to the decor may be carried out in the meantime to maintain the indoor environment in the hotel.

Charles Tallack B.Eng (Hons), C.Eng, MIStructE, MIMechE, ACGI

References and Notes:

[1] British Geological Survey
[2] Extract from Buildings Research Establishment website

BRE Digest 251: Assessment of damage in low-rise buildings[2].

Six categories of crack are identified, which linked the width and number of cracks to the type of repair that was appropriate.

Damage categories with descriptions of typical damage. Ease of repair in italics.

0 - Hairline cracks of less than about 0.1 mm which are classed as *negligible*. No action required.

1 - Fine cracks that can be treated easily using normal decoration. Damage generally restricted to internal wall finishes; cracks rarely visible in external brickwork. Typical crack widths up to 1 mm.

2 - *Cracks easily filled*. Recurrent cracks can be masked by suitable linings. Cracks not necessarily visible externally; some external repointing may be required to ensure weather-tightness. Doors and windows may stick slightly and require easing and adjusting. Typical crack widths up to 5 mm.

3 - *Cracks that require some opening up and can be patched by a mason*. Repointing of external brickwork and possibly a small amount of brickwork to be replaced. Doors and windows sticking. Service pipes may fracture. Weather-tightness often impaired. Typical crack widths are 5 to 15 mm, or several of, say, 3 mm.

4 - *Extensive damage which requires breaking-out and replacing sections of walls*, especially over doors and windows. Windows and door frames distorted, floor sloping noticeably. Walls leaning or bulging noticeably, some loss of bearing in beams. Service pipes disrupted. Typical crack widths are 15 to 25 mm, but also depends on number of cracks.

5 - *Structural damage that requires a major repair job, involving partial or complete rebuilding*. Beams lose bearing, walls lean badly and require shoring. Windows broken with distortion. Danger of instability. Typical crack widths are greater than 25 mm, but depends on number of cracks.

In general, categories 0, 1 and 2 with crack widths up to 5 mm can be regarded as ‘aesthetic’ issues that require only redecoration. Categories 3 and 4 can generally be regarded as ‘serviceability’ issues, that is, they affect the weathertightness of the building and the operation of doors and windows.

Category 5 presents ‘stability’ issues and is likely to require structural intervention.
BRE Digest 251, and in particular the table above, is now used widely in the industry as a way of categorising cracks and determining whether any intervention is necessary.

It should be stressed that these comments are a simplification of the assessment needed to properly classify damage to housing. Several factors, including whether the widths of the cracks are increasing with time, can affect the classification. BRE Digest 251 should be consulted when carrying out any assessment and a building professional should be consulted where damage is significant.

Appendix – Aerial Views

Source: Google Earth

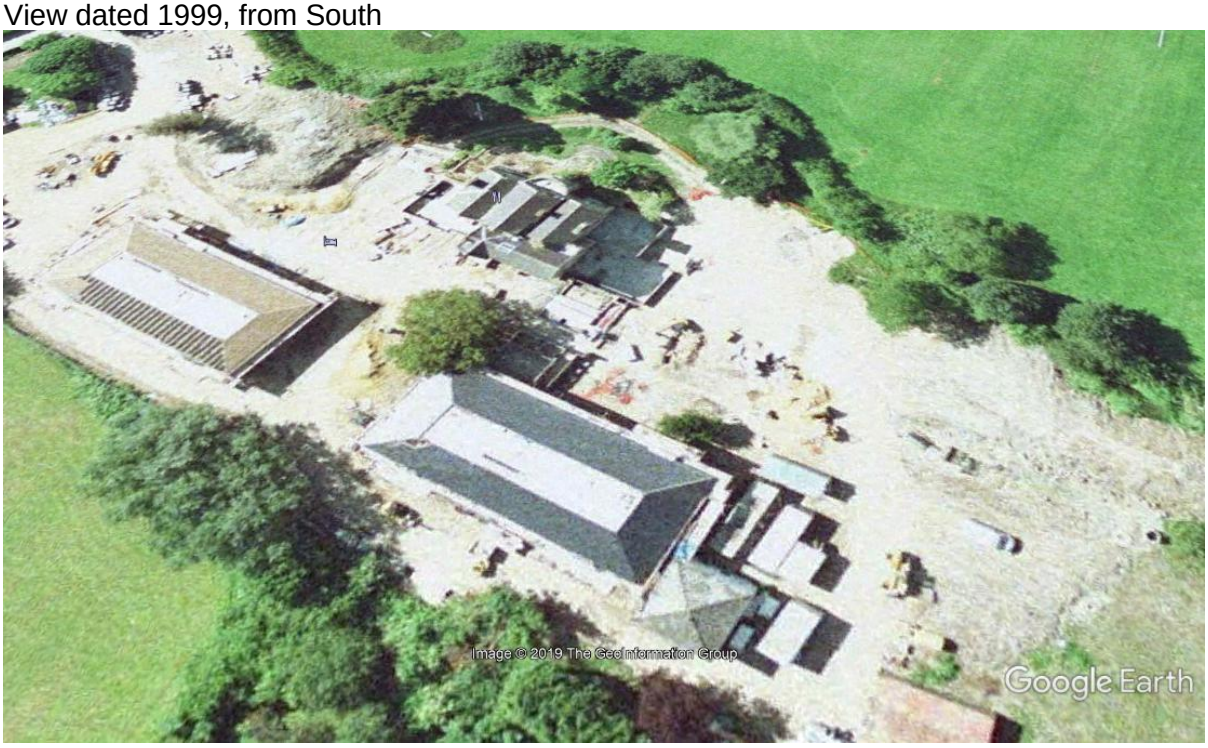
View from North

View from South

Appendix – Aerial Views

(continued)

View dated 1999, from South



View dated December 2002, during redevelopment

APPENDIX 2
STRUCTURAL REPORT – ARC ENGINEERS OCTOBER 2022

ArcEngineers
Consulting Civil & Structural Engineering

STRUCTURAL REPORT

PROJECT	HOTEL FELIX WHITEHOUSE LANE, CAMBRIDGE, CB3 0LX
PROJECT NUMBER	20 106
CLIENT	CASSEL HOTELS (CAMBRIDGE) LTD
REPORT DATE	OCTOBER 2022

The Institution of Structural Engineers

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PROJECT NAME	**HOTEL FELIX** **WHITEHOUSE LANE, CAMBRIDGE, CB3 0LX**
PROJECT NUMBER	**20 106**
CLIENT	**CASSELL HOTELS (CAMBRIDGE) LTD**

REVISION	DATE	WRITTEN BY	REVIEWED BY
Initial issue	October 2022	A Rimmington CEng MIStructE	M Rafiq CEng MICE MIStructE

Photograph on cover taken Circa 2017 - https://www.london-unattached.com

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APPENDICIES

1. INTRODUCTION

At the request of Cassel Hotels (Cambridge) Ltd, an inspection visit of the property was carried out on Friday 14th October 2022. At the time of the inspection, the weather was dry and fine.

This report is restricted to the older part of the property to determine its condition and viability for refurbishment for future commercial use.

The purpose of the visit was to inspect all visible and accessible areas of the building in order to determine the current structural condition of the property. The external inspection was carried out from ground level, or, where access was possible, from the flat roof areas at first floor level. To aide closer inspection of some areas such as window heads, ladders were used.

A series of plans and elevations are provided in the Appendix A and B. Throughout this report reference will be made to these drawings and the photographic references annotated on the same.

It should be noted that this report refers to the front elevation as that being with main entrance door to the hotel and the rear elevation being that with the circular bay. This is opposite to how the building is referenced in Bidwells' Significance Assessment Report (SAR).

2. BACKGROUND

It is understood that the property was constructed in 1852 as a private residence and remained in this use until the late 1960's when it was converted to a "Country Centre" by Cambridge District Council. With reference to the SAR it is understood that the property was significantly extended to the north-western side. There is visible evidence on the west elevation of the 1960's extension having been removed with a poorly bricked-up opening at first floor level and line showing the profile of the former roof.

It is understood that the Council sold the property in 2001 with it being subject to further alterations and extensions before being opened for Hotel use in 2002.

It is also understood that there have been a number substantial changes to the left hand side of the front elevation over the years. It is thought that an original extension was carried out Circa 1903 to make the front of the building more symmetrically which is noted in para. 5.7-5.10 of the SAR.

Subsequent to this original extension, there appears to have been further work carried out to this elevation. It is considered further work was carried out at the same time the building was converted to a hotel, as the façade brick matches that of the bedroom wings.

3. EXTERNAL INSPECTION AND OBSERVATIONS

The following is a summary a list of photographs taken through the property along with notes as to what they show. The colour coordinated key in the right hand column is based on the following;

	Comment only	BRE Digest 251 Assessment of damage in low-rise buildings
	Minor intervention required	Damage class 0 – 1
	Moderate intervention required	Damage class 2 – 3
	Large scale intervention required.	Damage class 4 - 5

3.1. FRONT ELEVATION

Photo	Reference should be made to Appendix A – Drg SN 1000	
F 1 F 2	Front elevation showing extensive growth of red ivy; difference between modern and original brickwork and poor condition of roof tiling and pointing at verge detail. The photo on the front page also shows this difference in brick with the noticeable colour difference.	
F 3	Front entrance. Canopy starting to show signs of deflection to right hand side. Heavily weathered mortar to masonry mullion at first floor and junction of quoins on right hand side	
F 4	Junction with extension from Circa 2002 showing similar, modern brickwork.	
F 5 F 6 F 7 F 8	Masonry above entrance door under canopy. Poor and unsuitable repair in OPC. Several horizontal and vertical cracks in masonry. (DC 3-4) Will require a degree of breaking out and replacement to ensure arch is stabilised.	
F 9	Heavily weathered area of masonry will require repointing. (DC1) Below window, below plinth block and spot repairs	
	Areas previously repaired with unsuitable OPC pointing / patches.	
	Movement to plinth block and development of cracking above and (DC3)	
F 10	Bay window to right hand side. Extensive ivy growth.	
F 11	Large ivy root causing movement to lightwell below bay window. (DC 5) Will require significant intervention due to root network and waterproofing. See also photographs B16-B18)	
F 12 F 13	Junction with extension from Circa 2002.	
F 14	Substantial invasive root 60mm diameter.	
F 15	Some ivy removed to bay window area.	
	Previous repairs to arches over basement window and cracking within the same	

	Cracking to perp. Joints in masonry above arches and below plinth	
	Movement and cracking along plinth line	
	Previous repointing in inappropriate OPC above plinth and below gf windows	
	Crack in window cill block	
	Individually these are all minor items, however to address them all would required significant rebuilding of this area. (DC 4) The cause of this movement is considered to be subsidence caused by the adjacent root.	
F 16	Cracked brick centrally and cracking to pointing above ivy branch on RHS (DC3)	
F 17	Movement and damage to stone work and guttering (DC3)	
F 18	See also F24 – heavily weathered masonry. Some vertical gaps starting to open on perp.ends between masonry and stone quoins. Area will require repointing and potentially tying. (DC2-3)	
F 19	Original masonry of entrance projection shown against newer masonry of left hand wing.	
F 20	Cracking to mortar joints in arch over first floor window (approx 10mm) DC3-4)	
F 21	Substantial ivy root at location of rwp/drainage gully	
F 22	Junction with existing. Extensive ivy growth around rwp's and guttering.	
F 23	RWP, gully and further plant / root growth	
F 24	See F18	

3.2. REAR ELEVATION

Photo	Reference should be made to Appendix A – Drg SN 1001	
R 1	Full elevation on rear for context. Steps and terrace area are uneven and surfacing is unsuitable for present us. This is shown by the number of 'grip strips' that have been added for customer safety	
R 2	Right hand side aspect for context. Overall assessment of this portion, R2 – R11 is DC 5 as the number of local repairs required would be more effective when undertaken as a full re-build and reinstatement to prevent over stressing.	
R 3	Damage to cill block caused by settlement due to concentrated load imposed from central mullion. Replacement required with reinforced cill piece. This will require extensive propping to arches above.	
R 4	Cracking below the first floor window cill at both the left and right hand sides.	
R 5	Cracking to left hand cill. Weathered masonry.	
R 6	Cracking (and historic repair) to central arch over mullion	
R 7	Heavily weathered masonry to top gable area will require repointing	
R 8	Poor repairs to bed and perp joints adjacent to window frame. Spot repairs in OPC	

R 9	Poor repairs to bed and perp joints adjacent to window frame. Spot repairs in OPC	
R 10	Cracking and dislocation to masonry below window	
R 11	Vertical crack and movement of parapet and coping stone.	
R 12	Typical window reveal to left hand side of bay window. Thick masonry pointing >10mm suggests ongoing movement with the external masonry possibly being un-tied to the inner part. (unlikely to be cavity wall construction) Replace windows and provide through ties to masonry. It should be noted this is likely to apply to all of the brickwork piers to the bay window however it was not possible to inspect them due to the ivy growth.	
R 13	Invasive root crossing terrace area	
R 14	Tree root – 40mm diameter	
R 15	Left hand side for context Overall assessment of this portion, R15 – R24 is DC 5 as the number of local repairs required would be more effective when undertaken as a full re-build and reinstatement to prevent over stressing.	
R 16	Damage to cill block caused by settlement due to concentrated load imposed from central mullion. Replacement required with reinforced cill piece. This will require extensive propping to arches above.	
R 17		
R 18	Cracking and movement o brick arch over right hand window at first floor	
R 19	Heavily weathered masonry to top gable area will require repointing	
R 20	Cracking and movement shown starting from btm left of photo, migrating to opening perpend joint were vegetation is starting to enter building.	
R 21	Cracking to the masonry above the central mullion – similar to opposite side.	
R 22	Significant movement of window frame and masonry	
R 23	Further movement and cracking between masonry on arch	
R 24		
R 25	Coping stone movement / out of alignment	

3.3. EAST ELEVATION

Photo	Reference should be made to Appendix A – Drg SN 1002	
E 1	Elevation for context – taken at ground floor level	
E 2	Elevation for context – taken at roof level. New masonry to front area can be seen to the area on the right of this photo. To the left, the masonry appears to be in two distinct bands; the upper portion being heavily weathered, the lower portion having fared somewhat better.	
E 3	Non original coping stones to rebuilt gable Failing masonry.	

	Poorly detailed / installed flashings	
E 4 E 5	Unusual horizontal line of repair scaring / repointing either side of chimney stack. This appears to be in two parallel lines, which pass through the stone quoins. These could possible be part of a previous structure, now removed.	
E 6	Poorly worked original stone above plinth blocks. Waterproofing / flashing detail. If the low level ground floor structures are removed, these items, and others, are going to leave a lot of unsightly traces.	
E 7	Previous repair to masonry to right of chimney in inappropriate OPC.	
E 8	Damage to cill under main arched window – will need replacing Repointing to masonry under cill. Cracking to masonry on left hand side, above and below cill. Multiple layers / levels of flashing detail	
E 9	Failing to left of centre arch with cracking above to coping cill piece. Arch has been repointed with OPC. Joints look considerably thicker than other masonry and arches which suggest this is not original. Cracking from quarter point of arch on left. Cracking from springing point of arch on left Poor gutters and coping stone	
E 10	Interface of original masonry with the rebuilt section of the extended property. Note, this is not the 2002 bedroom wing.	
E 11	Chimney – slight inward lean.	
E 12	Distortion of line of coping stone to rear elevation. Coping and gutters need replacing	
E 13 E 14	Photos for context showing the rebuilt left wing in modern masonry and coping stones	

3.4. WEST ELEVATION

Photo	Reference should be made to Appendix A – Drg SN 1003	
W 1 W 2 W 3	Elevations shown for context. New extensions at ground floor. Additional faux chimney added Circa 2002 for dumb waiter. Poorly matched infilled masonry	
W 4 W 5 W 6	Elevation taken at ground floor roof level shows evidence of previous structure on gable wall and poorly infilled areas	
W 7	Coping stone movement affecting quoin stones. Area will require rebuilding	
W 8 W 9	Closer view of poorly walled up brickwork and faux additional chimney.	

W 10	Poor flashing detail to faux chimney	
W 11	Interface of faux chimney and original	
W 12	Flashing details and hidden gutter. Access for maintenance is going to be difficult.	
W 13	Vertical cracking / separation of new and existing	
W 14	Leaking gutters and growth. Not easily accessible for repair.	
W 15	Reverse view of W12	
W 16	As W12	
W 17	Flashing detail. If the low level ground floor structures are removed, these items, and others, are going to leave a lot of unsightly traces	

4. INTERNAL INSPECTION AND OBSERVATIONS

4.1. BASEMENT

Photo	Reference should be made to Appendix A – Drg SN 2000	
B 1	Standing water due to either failed tanking or water leak.	
B 2	Further investigation required.	
B 3	Vertical cracking at door jamb. Suggest over stressed masonry and inadequate bearing of lintel over door way.	
B 4	Likely to be linked to issues associated with G2 at ground floor and cracking to main window on east elevation.	
B 5	Allow for further investigation and substantial propping and rectification work	
B 6	Vertical cracking at door jamb. Suggest over stressed masonry and inadequate bearing of lintel / beam. This member supporting precast planks forming ramp at ground floor level. Existing structure will need propping, bearing details made good and potentially longer beam installing.	
B 7	Basement tanking. This was the only location that basement tanking was visible which showed a failing bitumen lined internal wall.	
B 8	This is an outdated method of tanking basement walls which can lead to sub-structure degradation as the masonry behind the tanking is effectively permanently saturated. Remove all such tanking and replace with an internal drained cavity product.	
B 9		
B 10	Are of ceiling previously removed. Suspect this was carried out to repair a leak. This photo shows a substantial notch for pipework and further holes for cables. This is one isolated example, however, given its history of re-use, it is highly likely that other similar weaknesses occur throughout the building. Due allowance will need to be made for inspecting all floors at every level and for repair and replacement of joists.	
B 11	Damp ingress / rising damp on internal walls within basement area.	
B 12		

B 13	This would suggest that the tanking at floor level, either under or above the slab is failing and that there is no damp-proof coursing.	
B 14		
B 15		
B 16	Internal walls behind lightwell to front observation. Rising damp / water ingress from failed, or not present, tanking and DPC's Restricted floor to ceiling heights in this area of 2100mm	
B 17		
B 18		
	General note. The kitchen is split between two areas with three steps between the two rooms. The upper area has a very restricted floor to ceiling height of 2100mm, the lower area has a floor to ceiling height of 2280mm which is very restrictive for commercial kitchen operations. The split level and inclusion of three steps in a busy working environment also presents a hazard for kitchen staff working in that environment. It would be remis of us not to mention that this has implications under various pieces of legislation, including; The Health and Safety and Work Act. The Workplace (Heath Safety and Welfare Regulations 1992 The Construction Design and Management Regulations 2015 We would advocate designing out this hazard and the risks associated with it.	

4.2. GROUND FLOOR

Photo	Reference should be made to Appendix A – Drg SN 2001	
G 1	Crack to the arch within the entrance hall. This corresponds with further cracking in the wall directly above. Further investigation required.	
G 2	Substantial vertical crack (5mm) to right hand side of the doorway. This corresponds to movement on floors above and below.	
G 3	Internal elevation on what would have been the original ground floor wall to the east elevation. Ceiling in poor condition. Cracking above cabinet inline with righthand jamb of the lefthand opening. Cracking to left hand jamb of the righthand opening. Will require propping of floors and walls above to allow new beams to be instated. Masonry will require strapping / stitching and making good. Under pinning may be required	
G 4	Close up view of cracking to wall above right hand opening	
G 5	Ceiling defects. Will require replastering and finishing once cause of movement has been identified and halted	
G 6	Ceiling defects. Will require replastering and finishing once cause of movement has been identified and halted	
G 7		
G 8	Cracking to wall above opening between main room and bar area	

	Will require propping of floors and walls above to allow new beams to be instated. Masonry will require strapping / stitching and making good. Underpinning may be required.	
G 9 G 10	Cracking across ceiling to bay projection. This would suggest settlement of the bay area away from the main building. Further investigation required. Underpinning may be required however this would be difficult with the basement below.	
G 11	Internal elevation on what would have been the original ground floor wall to the west elevation. Two cracks in wall above doorway between main room and anti-room which progresses through the coving and into the ceiling. This would lead to the conclusion that the lateral movement being experienced by the walls is causing the damage to the ceilings. Will require propping of floors and walls above to allow new beams to be instated. Masonry will require strapping / stitching and making good. Underpinning may be required.	
G 12	Doorway between main room and bar area. Vertical crack, floor to ceiling. Will require propping of floors and walls above to allow new beams to be instated. Masonry will require strapping / stitching and making good. Underpinning may be required.	
G 13	Internal elevation on what would have been the original ground floor wall to the west elevation. Progressive diagonal cracking. This corresponds with damage to first floor above. Masonry will require strapping / stitching and making good. Underpinning may be required.	
G 14	Cracking to plasterwork of arch. Further investigation required to review effect of structure behind.	
G 15	Cracking to side of arch within entrance hall. Requires further investigation	
G 16 G 17 G 18 G 19	Doorway between anti-room and main room from ani-room side. Substantial cracking over doorway >5mm Will require propping of floors and walls above to allow new beams to be instated. Masonry will require strapping / stitching and making good. Underpinning may be required.	
G 20	Ceiling parallel with the original ground floor wall to the west elevation.	

4.3. STAIRCASE

Photo	Reference should be made to Appendix A – Drg SN 2001	
ST 1	Spirit level on tread of lower flight	
ST2-3	Close up of bubble	
ST 4-5	Spirit level, levelled	
ST 6	Measure of deflection of treads – 28mm	
ST 7	Spirit level on tread of upper flight	
ST 8	Close up of bubble	
ST 9-10	Spirit level, levelled	
ST 11	Measure of deflection of treads – 25mm	

4.4. FIRST FLOOR

Photo	Reference should be made to Appendix A – Drg SN 2002	
FF 1	Internal view of arch over doorway taken from within lobby. Cracking 3-5mm across corners from springing points of arch. Extends into ceiling and covings on left hand side. Will require propping of ceiling and walls above to allow new beams to be instated. Masonry will require strapping / stitching and making good	
FF 2		
FF 3		
FF 5		
FF 6	Damage to ceiling finishes	
FF 7	Substantial horizontal and vertical cracking >5mm above door way between function room and side room. These cracks pass all the way through the wall and are in a similar location on ground floor. This suggests that the entire wall is experiencing movement and subsidence; as such, the damage category would be considered to be 4-5 as repairs will not just be isolated local ones.	
FF 8		
FF 9		
FF 10	Horizontal cracking running around the ceiling to the bay window	
FF 11	Horizontal cracking to ceiling at line of coving	
FF 12	Damage to ceiling finishes in meeting room	
FF 13	Vertical crack above doorway and diagonal cracking behind the fire extinguishers. See also FF25	
FF 14	Cracking above arch, as also noted on opposite side. Crack pattern suggests masonry arch failure rather than decorative plaster. Damage to ceilings and decorative plaster will need replacing.	
FF 15	Cracking above doorway see also FF17	
FF 16	Internal cracking around window. Replicated on outside elevation	
FF 17	See FF15 – cracking through masonry and plaster covings.	

FF 18	See FF15 – cracking through masonry and plaster covings.	
FF 19	Diagonal cracking above door way within side room. (opposite to FF7-8-9). Cracks >5mm and extend into paster coving and ceiling. Will require propping of ceiling and walls above to allow new beams to be instated. Masonry will require strapping / stitching and making good. Consider under pinning requirements	
FF 20	Damage to ceiling finishes in side room	
FF 21	Internal elevation on what would have been the original first floor wall to the west elevation. – see also FF26	
FF 22	Diagonal cracking to ceiling. This linked to movement on external walls	
FF 23	Pattresses on inner wall. Possibly to restrain one of the chimney stacks	
FF 24	Cracking to arch. Arch considered to be formed of masonry. Will need further intervention	
FF 25	Vertical crack above opening in meeting room. Combined with movement on this wall below, it is considered this wall is suffering from subsidence.	
FF 26	Internal elevation on what would have been the original first floor wall to the west elevation. Diagonal cracking behind liner paper, previously repaired. Damage and movement to ceiling above. Further investigation required. Crack stitching repairs as a minimum	
FF 27 FF 28	Internal elevation on what would have been the original first floor wall to the east elevation. Diagonal cracking behind liner paper, previously repaired. Crack stitching repairs required as a minimum	
FF 29	Internal cracking around window. Replicated on outside elevation	

4.5. SECOND FLOOR AND ROOF

Photo	Reference should be made to Appendix A – Drg SN 2003	
SF 1	High level view of weathered gable masonry (lhs) – repoint	
SF 2	View on secret gutter	
SF 3 SF 4 SF 5	Internal view on parapet. Repointing required as a minimum. Access should be restricted as parapet is not high enough, nor will it have resistance to lateral load.	
SF 6	View on secret gutter	
SF 7	High level view of weathered gable masonry (central) – repoint	
SF 8	Horizontal banding above windows to be repaired	

SF 9	Repointing and cleaning of masonry Window cills and frames to be replaced Poor detailing and repairs to flashing. Looks to have had several mortar repairs and flashing cut in at different heights.	
SF 10		
SF 11		
SF 12		
SF 13		
SF 14	Internal movement of gable wall and ceiling. 15-20mm SF16 would suggest this has been ongoing for a while and has been previously repaired. Further investigation required. Maybe linked to subsidence of flank walls. Maybe linked to movement noted at ground floor level across the ceiling at this line, attributable to subsidence of the bay projection.	
SF 15		
SF 16		
SF 17		
SF19 22,23,24	Views within roof space. Insulation to be replaced. What appears to be fire protection laid across rafters – possibly asbestos. Plant equipment with very limited access	
SF25-27	Secret gutter with services on built up roof. Access issues? Note – tiled roof to left hand is much newer than the rest of the roof which corresponds with this portion being partially rebuilt in recent times.	
SF 26	Reverse view of secret gutter and access to roof space shown in photos 19,22,23 Only physical access to roof is via the window shown open in this photo.	
SF 28	Lead flashing detail at unnecessary dislocation of roof line. Slight incline of chimney. Gutters to be replaced.	
SF 30	Lead flashing to stone copings. Would suggest historic issues with water ingress Coping and flashings will all need to be replaced / re-bedded	
SF 31	Cracking and movement to copings. Will need re-bedding and securely fixing	
SF 32	Only physical access to roof is via the window shown open in this photo. Debris to be removed. Gutters to be replaced. Lead flashing over coping to front to be investigated, removed and made good	
SF 33	Further interfaces of roof	
SF 34	Access to roof over guest bedrooms. Area not accessed from this point. No access found internally.	
SF 35	Capped off chimneys. Flashings need minor attention	
SF 36	Chimney in need of repointing and flashing work. Poor detailing to gutter Gutter needs replacing	
SF 37 - 40	Flashing to coping stones would suggest historic issues with water ingress Coping and flashings will all need to be replaced / re-bedded	
SF 41	Flashings and gutter need attention	
SF 42-43	Views on rear of chimneys. Secret gutters dangerous / inaccessible for cleaning. Flashing needs attention	

SF 44&45	Some distortion to ridge line. Roof will need re-tiling. Gutter to be replaced	
SF46/52	Pointing, flashing and copings to verge need attention; lifting, re-flashing, rebedding and securing. Depth between coping and roof line not sufficient to provide proper flashing detail.	
SF47	Small area of flat roof to be replaced and made good.	
SF48/49	Views on rear of chimneys. Secret gutters dangerous / inaccessible for cleaning. Flashing needs attention	
SF 50	Slipped tiles and heavily weathered. Roof to be replaced	
SF 51	Capped off chimneys. Flashings need minor attention	
SF 52	View on main roof showing slipped and aged tiles and ridge.	
SF54-56	Unusual slated wall detail. Repaired to install vent. Replace with suitable low maintenance products. Replace guttering and ensure flashings are fixed.	
SF 57	Flashings needs attention. Gutter to be replaced	
SF 58	Vertical cracking in corner to be strapped and repointed	
SF 59	Vertical crack below window frame in stair well. To be tied and repointed. Note this corresponds with cracks to walls as noted in G12 / FF19 etc	
SF60-64	Area within roof space. Note plant equipment of considerable size. Internal access is via a 320 x 600 hatch on the stair case or via external access hatch at roof level shown in SF 55.	

5. OBSERVATIONS

The property has clearly undergone a lot of alterations and extensions in the past and has a number of scars to show its development over the past 170 years. The building is not listed, nor does is sit within a conservation area, both aspects which are already covered in the Bidwells' report. It is however worth noting, as evidenced above, that building does not appear to have aged well, nor has there been much regard for maintaining its integrity.

Given the number of structural cracks to the walls and ceilings it is hard to conceive that the property would have functioned as a luxury hotel without customer complaints. A brief inspection report was carried out in September 2019 by Structural Engineers Cambridge Ltd which notes that *"various damaged areas were noted on all storeys"* and that further detailed investigation would be required. As such, it is considered that during its operation as a hotel there must have been a substantial amount of ongoing and regular redecoration carried out to disguise the underlying issues.

As noted in the schedule of photographs, there are a many local areas of cracking and poor repair that require attention. If these were individual elements of damage, one would not be too concerned, and localised repairs could be effected. However, given the number of issues identified, and the interrelation of movement at ground, first and second floor, one needs to be mindful of the global factors and the cause of the movement.

From published geological records, the subsoil of this site is identified as Gault Clay, a material which has a high plasticity index. This means the clay will shrink and swell in response to changes in moisture / water content. Consequently, these changes brought about by seasonal or climatic variations, as well as the growth of trees in the vicinity and leaking drains, will influence the behaviour of building foundations.

At this point, it is important to understand the distinction between subsidence and settlement and why, in this instance it is not straightforward to entirely attribute the structural problems to either one cause.

Subsidence occurs when the supporting soil moves away from the structure taking away its support and allowing the structure to move.

Settlement is where the structure moves the soil due to application of load.

It is our view that the building is suffering from a combination of both subsidence and settlement.

Subsidence is considered to be causing the majority of the issues brought about by changes to the moisture content of the clay which results in the clay becoming desiccated and shrinking away from supporting the foundations.

With regards to Hotel Felix, there are multiple factors contributing to this shrinkage, including;

- The number of substantial trees around the building.
- A substantial number of established Ivy roots in close proximity to the building's drainage system and foudnations.
- The high plasticity natural ground conditions
- The relatively dry weather conditions during 2022 which is at present 43% lower than average.

		Rain (mm)
2022	Jan	16.6
2022	Feb	63.2
2022	Mar	33.8
2022	Apr	5.2

2022	May	29.2
2022	Jun	34.4
2022	Jul	1
2022	Aug	21.2
2022	Sep	32
Average 2022		26.3
Average 2012-2022		46.7
Historic station data - Met Office		

Settlement is also considered to be contributing the problems due to the various adaptations and alterations to the building over the years causing higher loads to be imparted to foundations where walls have been removed to create openings

6. RECOMMENDATIONS

There are a number of aspect to consider with regards to the rectification of the identified defects which are outlined below. It should be noted that items 6.2 & 6.3 cannot be undertaken without addressing the substantial works required in 6.1. Consideration of items in 6.4 should also be given due consideration.

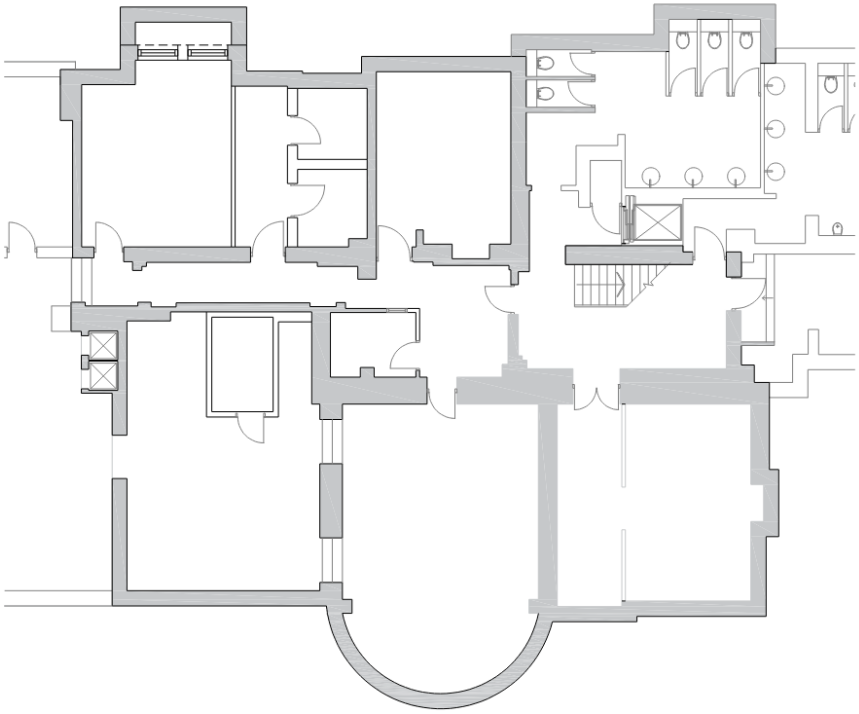
6.1. Preventing any further reoccurrence of subsidence

Visible damage caused by the ivy can be seen to both the external elevations and internal walls. However, what cannot be seen at present is that which is happening underground. Some ground investigation works should be carried out around the perimeter of the building, and also from within the basement. Subsequent geotechnical testing would need to be carried out to determine the natural moisture content of the clay and its degree of desiccation or otherwise.

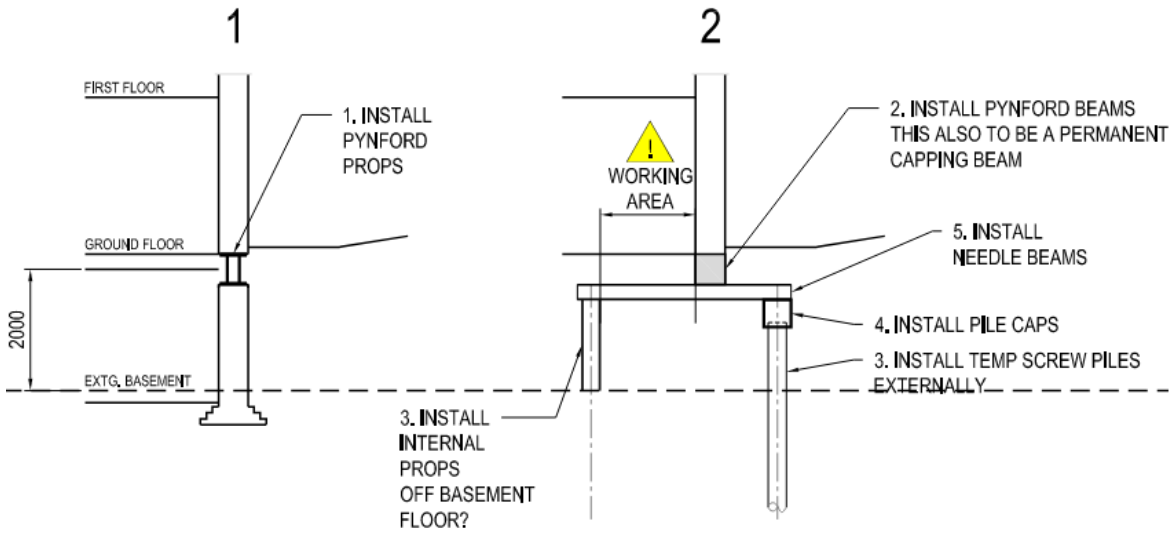
We would advise that it is unwise to simply cut-back any of the ivy or trees at this stage. If the ground has become desiccated, doing so would then cause the moisture content to increase causing the ground to heave. This reversal would then lead to further structural issues.

At the present time, the most expedient way of stabilising the building against further issues due to the interaction of the soil conditions with the surrounding landscaping would be to underpin the principal walls of the main original building. The extent of this underpinning is shown in fig.1 below.

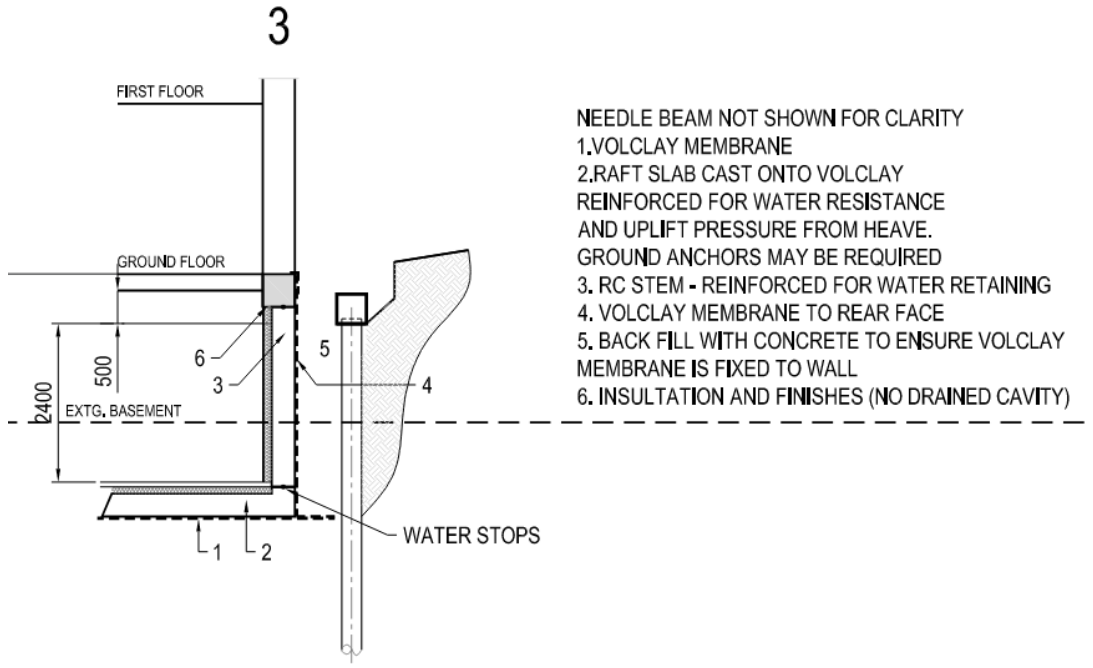
Fig.2 shows a possible sequence of works that would facilitate underpinning works, installation of suitable waterproofing and lowering the basement floor slab level to facilitate a suitable internal height for commercial activities and associated services. As can be appreciated, this will be a costly and time consuming piece of work.



Above - Fig 1. Extent of required underpinning



Above - Fig 2. (part 1) Potential sequence to facilitate, underpinning, waterproofing, reducing basement floor level



Above - Fig 2. (part 2) Potential sequence to facilitate, underpinning, waterproofing, reducing basement floor level – completed detail.

6.2. Repair to the visible structural damage

- As previously noted, it is considered that the building underwent ongoing and regular redecoration to disguise the structural issues. We would therefore recommend the removal of all decorative finishes, and potentially plasterwork in order to expose the masonry to determine if there is any other historic movement that needs addressing.
- Removal and rebuilding of masonry including crack stitching and strapping at the internal locations of all identified defects. This would include a substantial amount of propping of floors and walls to allow this work to be undertaken.
- Removal and rebuilding of masonry to the external elevations where defects have been noted. This would include a substantial amount of propping to walls and possibly floors depending on the span direction of the floor joists in order to allow this work to be undertaken.
- The main timber staircase will need to be removed and replaced as it is not fit for purpose in a commercial building, be that for Hotel, Office or Care home setting.
- We would also recommend opening up and lifting of all floor boards to determine the condition of the floor joists. This would include an inspection and assessment of the holes and notches that have been formed over the years for various services as the building has been adapted.

6.3. Repair to the visible cosmetic damage

Whilst our report is focused on structural matters, it should be noted that it is unlikely that any of the internal decoration would be suitable for remediation. All ceilings will need to be replaced throughout the building, and decorative plasterwork is considered to need replacing in full. Additionally, it is expected that all external windows and doors will need to be replaced due to the condition of their frames.

6.4. Other aspects for consideration

Water proofing basement.

The current method of waterproofing the basement is unknown, although what has been observed appears to be failing in a number of places. A new internally drained cavity waterproofing system could be installed however this would result in a loss of area as it would need to be applied to the inner face of walls. Additionally, it would also result in raising the floor level in the basement which is unlikely to be possible given that some rooms are only just 2000mm floor to ceiling.

Operational issues within the basement.

As noted above, it is considered that there is insufficient floor to ceiling height in the basement for a modern working environment. Further, the change in level in the kitchen area with three steps presents a significant health and safety hazard to members of staff working in that area.

Roof coverings

The entire roof will need to be re-tiled along with the replacement of guttering, flashings and rainwater goods. As noted in the photographs, access to the roof area is not adequate for the operation of a modern commercial building. Maintenance of these areas will become problematic leading to either neglect or unsafe working conditions trying to access these area which is presumably the case now with inaccessible plant in unsuitable roof spaces.

External walls

All of the external walls will require the removal of the ivy treatment of bed joints and perpends with a suitable herbicide to ensure that all aerial roots are removed and unable to re-establish themselves. Following on from this, the mortar joints will require repointing with a suitable non-hydraulic lime (NHL) mortar. Due to the nature of the existing thinly bedded masonry this will be a time consuming and labour intensive task.

Drainage

A full CCTV survey of the below ground drainage will need to be carried out to determine the condition of the existing pipework. As a minimum, it is expected that all gully points and the pipework immediately connecting to them will need replacing around the perimeter as the visual inspection shows there to be substantial interference from the root system of the Ivy. For budget purposes, we would suggest allowance is made for the replacement of all below ground surface water drainage.

It is expected that the foul drainage relies on some means of a rising main pumped system to evacuate sewage from the basement level. No evidence of the pump chamber was located at the time of our inspection, and this should be traced by specialist. It is likely that any pump system is around twenty years old, dating from around the time of the conversion to a hotel. We understand that no service records are available, and to this end it would be prudent to allow costs for a new package pump system to be installed.

Existing façades

How much of the existing building façade remains? We have carried out some basic calculations of elevation area based on the drawings included in the appendices from which it is considered that just over half of the visible elevations are original; details on this assessment are provided below.

Front	Approximately 60% of the existing elevation would appear to be original. The remaining portion having been rebuilt in modern brick.
Rear	The elevation is considered to be 100% original
East	Due to the rebuilding at first floor level in modern brick, and the substantial extension at ground floor level,. Approximately 30% of the existing building remaining on this elevation.
West	Due to the substantial extension at ground floor level there is approximately 40% of the existing building still visible at first floor level. This is further reduced by the poorly infilled brickwork and later addition chimney, added to hide a dumb-waiter.

It should also be noted that, if the ground floor extensions were to be removed from the east and west elevations, there would be substantial amounts of making-good required. These areas are shown in fig 2 & 3 below.

What were previously external, brick faced walls would have been plastered when enclosed in the 2002 extension works. It would be extremely difficult to restore these areas to their original gault-brick finish without substantial rebuilding.

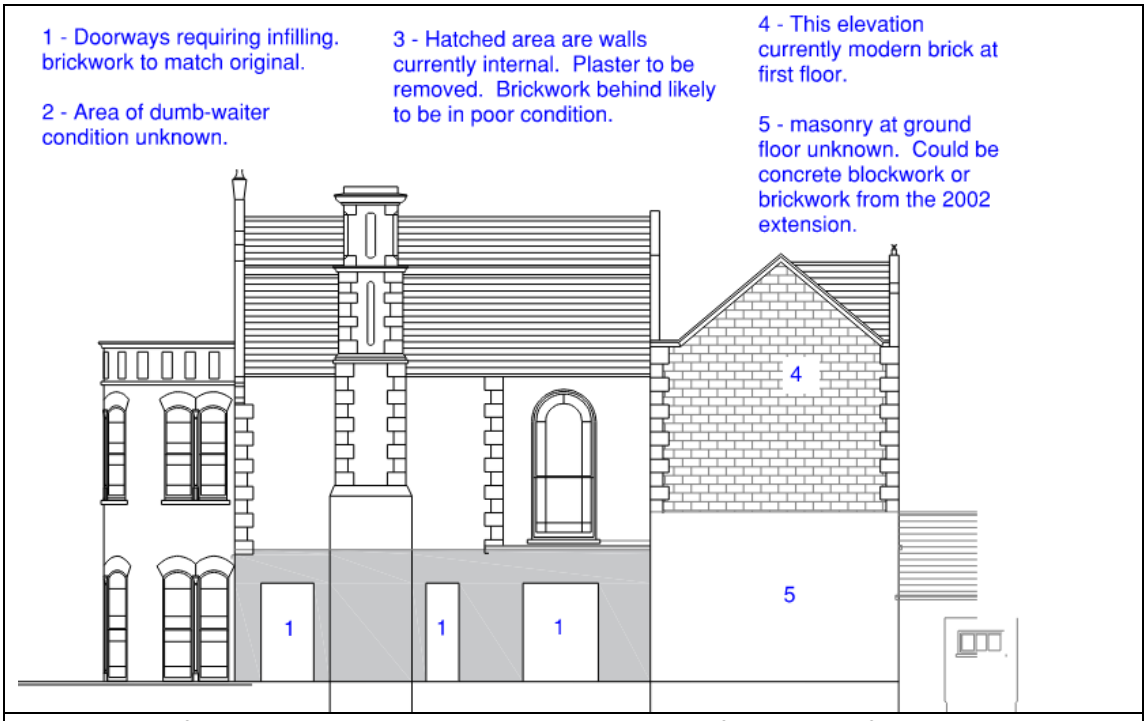


Fig 2 – Area of original east elevation that will require significant work if extensions are removed.

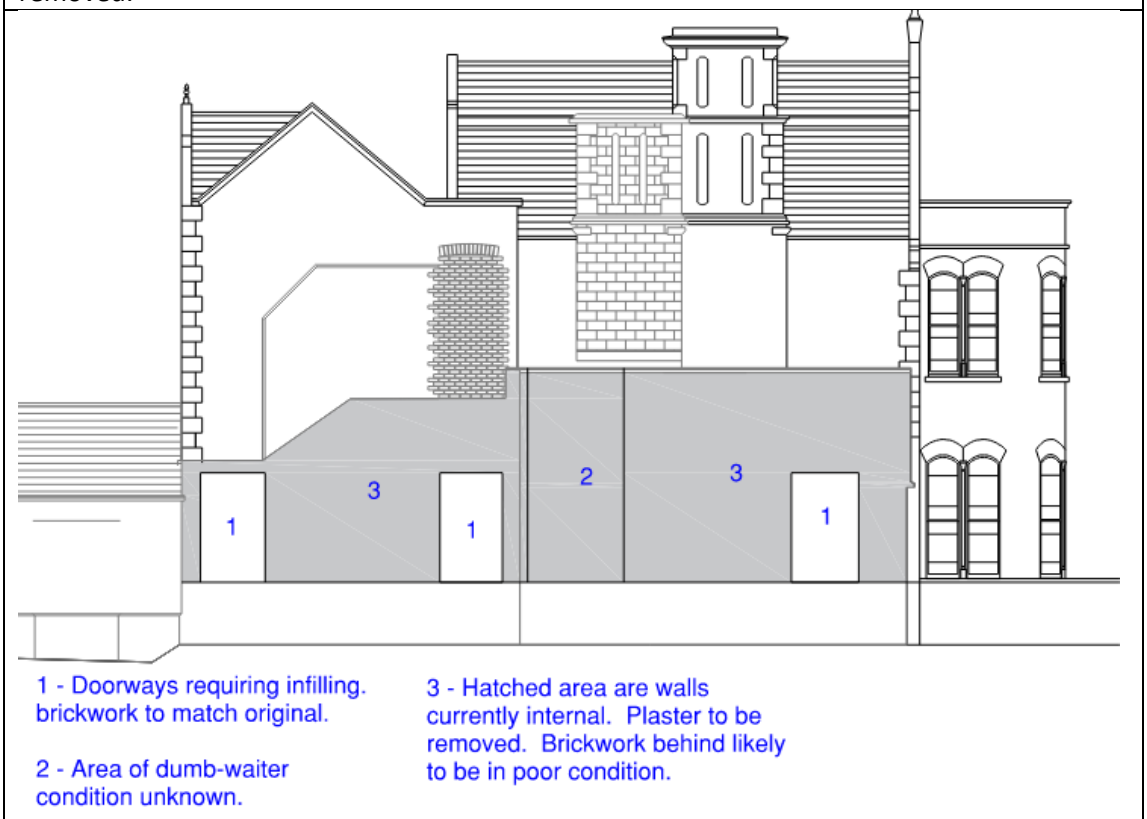


Fig 3 – Area of original west elevation that will require significant work if extensions are removed.

7. CONCLUSION

The building was constructed in 1850's as a private residential dwelling and over the subsequent 170 years it has been converted and altered multiple times. These alterations include the removal of elements of the original internal and external walls to form new openings, the construction of a new wing to the left hand side of the front entrance and the construction and subsequent removal of an extension to the west elevation. The rear elevation is perhaps the most original part of the building to remain, all other elevations having been altered and adapted in some way. However, this elevation itself requires structural repairs to the façade and foundations.

If the substantial remedial works were to be carried out on the property, the existing building would, on completion, only provide five usable rooms at ground floor and six rooms at first floor. It is debatable as to whether the second floor room could serve any functional purpose in isolation due to restrictions on access.

Whilst it would be possible to address the structural issues the building is currently experiencing, it is unlikely to be an economical and sustainable proposition to do so to achieve the limited and compromised amount of usable area.

8. BRE DIGEST 251:ASSESSMENT OF DAMAGE IN LOW-RISE BUILDINGS

Extract from BRE publication 251 – Table 1

Classification of visible damage to walls with particular reference to ease of repair of plaster and brickwork or masonry *Crack width is one factor in assessing category of damage and should not be used on its own as a direct measure of it.*	
Category of damage	Description of typical damage *Ease of repair in italics*
0	Hairline cracks of less than about 0.1 mm which are classed as negligible. *No action required*.
1	Fine cracks which can *be treated easily using normal decoration*. Damage generally restricted to internal wall finishes; cracks rarely visible in external brickwork. Typical crack widths up to 1 mm.
2	*Cracks easily filled. Recurrent cracks can be masked by suitable linings*. Cracks not necessarily visible externally; *some external repointing may be required to ensure weather-tightness.* Doors and windows may stick slightly and *require easing and adjusting*. Typical crack widths up to 5 mm.
3	Cracks which *require some opening up and can be patched by a mason. Repointing of external brickwork and possibly a small amount of brickwork to be replaced*. Doors and windows sticking. Service pipes may fracture. Weather-tightness often impaired. Typical crack widths are 5 to 15 mm, or several of, say, 3 mm.
4	Extensive damage which *requires breaking-out and replacing sections of walls*, especially over doors and windows. Windows and door frames distorted, floor sloping noticeably*. Walls leaning or bulging noticeably*, some loss of bearing in beams. Service pipes disrupted. Typical crack widths are 15 to 25 mm, <u>but also depends on number of cracks</u>.
5	Structural damage which *requires a major repair job, involving partial or complete rebuilding*. Beams lose bearing, walls lean badly and require shoring. Windows broken with distortion. Danger of instability. Typical crack widths are greater than 25 mm, but depends on number of cracks.
Local deviation of slope, from the horizontal or vertical, of more than 1/100 will normally be clearly visible. Overall deviations in excess of 1/150 are undesirable.	

9. LIMITIATIONS

L1. The conclusions presented herein are based on the inspection carried out on the date recorded. No liability can be accepted for the condition of parts of the structure which were not inspected or for deterioration after the survey.

L2. The opinions expressed in this report concerning any defect found and the risks arising there from are based on the personal opinion of the surveying engineer.

L3. This report shall be for the private and confidential use of Client for whom the report is undertaken and shall not be reproduced in whole or in part or relied upon by third parties for any use whatsoever without the express written authority of ARC Engineers Ltd.

L4. ARC Engineers Ltd shall have no liability for any use of the report other than for the purpose for which the report was originally prepared.

L5. **Asbestos.** Our inspection of the buildings and structures will not include searching for, or the identification of asbestos. This is specialist work and should be undertaken by suitably trained, experienced and licensed contractor or surveyor and as such is outside the scope of services provided by ARC Engineers Ltd. Where it is deemed necessary to arrange an asbestos survey we shall advise of the costs and programme implications.

L6. **Toxic Mould.** Our inspection of the building(s) does not include surveying of toxic mould and if any is suspected of being present we will recommend separate surveys are carried out by other qualified professionals.

L7. **Timber and Damp.** Our inspection of the buildings and structures do not include searching for or the identification of wet rot, dry rot or wood boring inspects. We have not inspected the woodwork or other parts of the structure which are covered, unexposed or inaccessible and we are therefore unable to report that any such part of the property is free from defect. This is specialist work and should be undertaken by suitably trained and experienced surveyors and is outside the scope of services provided by ARC Engineers Ltd. Where it is deemed necessary to arrange a timber and damp survey we shall advise of the cost and programme implications.

L8. **Geotechnical and Environmental Contamination.** Our inspection of the buildings and structures will not include any intrusive geotechnical investigation into the underlying ground conditions beneath the building nor the identification of underlying hazards eg. Shallow mine workings, landfill gas, radon etc. Nor will our inspection of the buildings and structures include searching for or the identification of any form of contamination. This work would require the investigation and sampling of the fabric and soil beneath the buildings and structures and taken for analysis. This is specialist work and should be undertaken by suitably qualified and experienced scientists/engineers and is outside the scope of services provided by ARC Engineers Ltd. Where geotechnical investigation is deemed necessary we shall advise of the costs and programme implications.

L9. **Flood Risk.** Our inspection of the buildings and substructures will not include an assessment of flood risk. This is specialist work and should be undertaken by suitably qualified Consultants and is outside the scope of services provided by ARC Engineers Ltd. Where it is deemed necessary to arrange a flood risk assessment we shall advise of costs and programme implications.

L10. **Material Testing.** Unless stated otherwise the sampling and testing of existing materials used in the fabric and finishes of the building is excluded e.g. HAC. Should the sampling and testing of materials be deemed necessary we shall advise of the cost and programme implications.

L11. **Access.** Unless stated otherwise the survey will be limited to a visual inspection of all safely accessible areas, including roof spaces and basements. Upper parts of the buildings and structures will only be visually inspected where safe access is considered possible. Where it is deemed necessary to arrange safe high-level access we shall advise of the costs and programme implications.

L12. **Intrusive Opening up of the Fabric**. Unless stated otherwise the survey will comprise a visual inspection from all areas of safely accessible buildings to determine the general structural condition and any significant defects. No parts of the building, which are covered, unexposed or inaccessible, will be inspected and therefore we will be unable to report that any such parts if the building is free from defect.

L13. **Services Installation.** We shall not inspect or test any services installation including drainage and are therefore unable to report that any such parts of the building is free from defects. Where it is deemed necessary to arrange for testing of services we shall advise of the cost and programme implications.

L14. **Plant Hire.** Unless stated otherwise our fee does not allow for any costs associated with the hire of any plant or specialist equipment, access equipment such as scaffolds or cherry pickers or costs associated with attending Contractors. Where the hire of plant is required we shall advise of the cost and programme implications.

L15. **Additional cost and Appointment of Specialist Sub consultants.** Where it is deemed necessary to arrange for specialist involvement we shall advise of cost and programme implications, however all appointments for external consultants will be direct to the Client and any associated costs are excluded from ARC Engineers account unless agreed otherwise.

BIDWELLS