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Former General Post Office
36-40 Abingdon Street, Blackpool. FY1 1DA

Structural Appraisal

Project number: 2200335
Status: Preliminary
Revision: P1
Date: Jan 2021

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Document Control

		remarks:	Preliminary				
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Appendices

1.0 Executive Summary

1.1 At the time of the visual inspection the two buildings appeared in stable condition, although there are some concerns that should be addressed. A photographic record of this visit can be found in the Appendix A.

1.2 On the whole the buildings are suitable for conversion to hotel use and the associated loadings subject to completion of the remedial items noted within this report.

1.3 Water within the basement of the Sorting Office Building has caused significant damage to the existing concrete protection to the steel columns. This has likely caused some corrosion which will need to be investigated.

1.4 Damage to the ground floor slab in courtyard next to The Sorting Office Building caused by demolition works will need repairing. The presence of water will likely have caused significant corrosion and a portion of this floor may need to be replaced pending further investigations

1.5 The steel filler joists within the roof structure of the Former Post Office Building may need replacing/strengthening. Further investigations should be undertaken to confirm the extent of the corrosion.

1.6 There is a concern to the long-term durability and fire resistance of the second floor within the Former Post Office Building. Further visual inspections are required once all surface finishes have been removed from the underside of the slab

1.7 Corrosion to the steel beams supporting the external ground/finishes within the front and rear lightwells of basement in the Former Post Office Building need addressing. Subject to external build ups/details all corroded steel beams will need suitable corrosion protection.

2.0 Introduction

2.1 Elliott Wood Partnership Ltd (EWP) was appointed by Ashall Projects to conduct a visual structural inspection (with limited intrusive investigations) of the former General Post Office and Sorting Office buildings as part of proposed refurbishment of the wider site. The report contains site observations, discusses the current condition of the buildings, and outlines some potential development options for consideration on how the building may be retained and reused in the future. The report will also outline any further investigations that should be undertaken.

2.2 Sketch plans of the existing building are provided in Appendix B. The commentary in this report should be read in conjunction with these sketches.

2.3 This report has been prepared solely for Ashall Projects, the report is not for the use of, or reliance on, by third parties. Any copying of the report for third parties without the express consent of Elliott Wood is prohibited.

3.0 Brief & Scope

3.1 This report is based on a structural appraisal undertaken using minor intrusive investigation techniques during a site walkover carried out on 7th & 8th December 2020.

3.2 EWP attended site and completed a full visual appraisal to all accessible areas. The weather on 7th December was dry and sunny, with continuous rain on the 8th December.

3.3 A section of the first floor in the Post Office Building was not accessible during the survey. The demolition of the stairs had removed the only access into this part of the building.

3.4 For the purpose of this report, we have assumed the size of the basement is as shown on EWP summary sketches (Appendix B) as this was all the accessible areas at the time of the visit and should be confirmed with the building's owner and a measured building survey.

3.5 Ashall Projects provided a MEWP to enable access to the upper floors of the former Sorting Office building and a contractor was on site to assist with opening-up works as an when required.

3.6 Opening works were not possible in the upper levels of the Sorting Office building due to the contractors fear of MEWP's. The ground floor ceiling within the Post Office building could not be accessed from below due to their height and limited apparatus available during the site visit.

3.7 This report does not cover the existing below ground drainage

3.8 At the time of the visit there was no safe means of accessing the roof to review the stone parapet on the front of the building. A third-party report has previously been conducted by the building owners' structural engineers which concluded that the stone parapet was in adequate condition.

3.9 No archive drawings have been provided or acquired, although an incomplete set of the previous engineers' drawings have been passed on for information.

3.10 The structural appraisal comments on the condition of the tunnel is based on what could be seen from the entrances. If any further investigations are required to confirm their position or potential re-use then it should be surveyed using a remote control device or undertaken by someone with confined space training

3.11 Proposals for possible future alterations have been assessed using key structural principles; no detailed calculations have been carried out, if required these will be undertaken during the subsequent design stages.

3.12 All the commentary contained within this report is in relation to structure. Specialist items such as damp, rot is outside the scope of this report.

4.0 Site & Existing Buildings

4.1 The site is located within Blackpool City Centre approximately 300m away from the North Pier. It is bounded by Abingdon Street to the south west and Edward Street to the north east. There are adjacent buildings along the north and south perimeter of the site

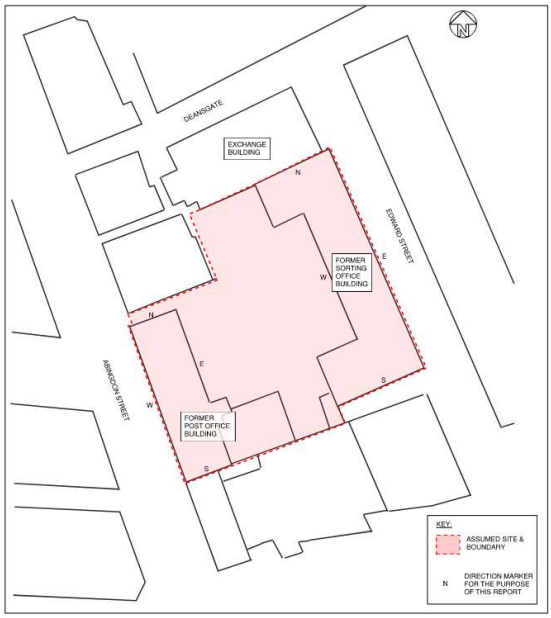

Figure 1 – Site Plan

4.2 The site consists of 2 existing buildings along the north west and south east with a large external courtyard with access off both Abingdon Street and Edward Street

4.3 Previously the central courtyard used to have an assortment of buildings, but these have since been demolished. These works appeared to be undertaken in 2016.

4.4 The building along Abingdon Street (Former Post Office) was believed to be constructed in 1910 designed by the architects of the Office of Works. The façade fronting Abingdon Street is Grade II listed. It has three storeys with basement and a hipped slated roof with a stone feature parapet to the listed façade. A rear section of what appears to be part of the original building has since been demolished as well as one of the stair cores.

4.5 The building along Edward Street (Former Sorting Office) was believed to be constructed circa 1930s with 4 storeys and basement. An additional storey has since been constructed over a section of the roof although there are no records as to when this was added.

5.0 Structural Appraisal

5.1 Former Post Office Building

5.1.1.1 Roof

Externally the roof appeared in poor condition with tiles missing and visible gaps along the ridge.

5.1.1.2 The existing hipped roof comprises steel trusses with concrete filler joist panels spanning in-between. The underside of the steel joists was visible from underneath with no concrete cover to the bottom flange. There was evidence of corrosion to the steel joists with reduction to section sizes in places and staining to underside of the concrete. Sections were also visibly wet.

5.1.1.3 There were a few areas where water ingress has caused the ceiling finishes to collapse with further water staining down the walls to the floor below

5.1.1.4 A few of the main steel trusses were viewed through holes in the ceiling. The trusses appeared to be in a good condition with nominal corrosion.

5.1.2 Second Floor

5.1.2.1 The second floor comprises concrete filler joist floor slabs supported on assumed loadbearing masonry walls along the perimeter and an internal concrete encased steel frame.

5.1.2.2 Previous opening up works had already been carried out to break away a section of the concrete floor along the western façade, exposing the steel joists. These appeared to be in a reasonable condition.

5.1.2.3 Substantial honeycombing was evident to large areas of the slab soffit leaving the bottom flanges of some of the steel joists completely exposed.

5.1.2.4 The concrete appeared to be 'clinker' which is significantly different to concrete that is used in current construction.

5.1.2.5 There were some signs of corrosion with staining to the underside of the floor in areas where the water had been entering through from the roof

5.1.2.6 The removal of the stairwell has damaged/removed sections of the floor with exposed steel joists remaining

5.1.2.7 Cracking to the concrete beam encasement was observed on one of the primary steel beams with the encasement removed locally to inspect the steel beam. The beam appeared in reasonable condition with no obvious signs of defects.

5.1.3 First Floor

5.1.3.1 The first floor comprises concrete filler joist floor slabs supported on assumed loadbearing masonry walls along the perimeter and an internal concrete encased steel frame.

5.1.3.2 A hole had previously been formed through a portion of the slab exposing the tops of the steel beams and joists below. The concrete appeared to be different to that within the second floor, noticeably darker with finer aggregate.

5.1.3.3 Ceiling finishes were still in place during the appraisal with no safe access to soffits due to the very high ceiling level.

5.1.3.4 During the appraisal EWP were not able access a section of the first floor past the demolished stairwell.

5.1.4 Ground Floor

5.1.4.1 Demolition of the buildings to the rear has exposed what appears to have been previously internal structure. This has resulted in the structure being exposed to the elements with noticeable

corrosion to the concrete filler joist floor and steel beams forming openings down into the basement.

5.1.4.2 The remnants of the single storey building to the rear appear to have been compromised by the previous demolition with internal beams now left exposed to the elements. The roof is formed from purlins sat onto steel trusses that are supported by load bearing masonry walls and steel columns. The steel trusses appear to be in reasonable condition although the roof itself is in disrepair allowing water into this area of the building.

5.1.4.3 Some of the steel beams supported by the western façade masonry wall appeared damp with mild surface corrosion.

5.1.4.4 The existing lightwells along Abingdon Street appear to have been covered up when referencing against some archive images. The steel beams supporting the slab/finishes have surface corrosion and it appears that some have been replaced with new galvanised sections.

5.1.5 Basement

5.1.5.1 During the site visit, rainwater surface run off was entering the building via an exposed previously internal doorway with water running down the stair and collecting within the basement. There was up 1 inch in places but only around the immediate area.

5.1.5.2 The existing lift pit (approx. 1100mm deep) was fully submerged in water. The masonry lift shaft appeared in reasonable condition.

5.1.5.3 An entrance to a tunnel is located in the northern area of the basement which appeared to run east towards The Sorting Office building. The tunnel appeared to have been constructed from masonry retaining walls and a steel plate lid which had some mild surface corrosion. There appeared to be drainage gullies within this area.

5.1.6 External Facades

5.1.6.1 The Grade II listed western and northern façade appeared to be in a reasonable condition with only some local signs of weathering to areas of the stonework. This was typically around every floor level. There were no visible signs of any notable cracking.

5.1.6.2 The rear (eastern) façade showed areas in a state of disrepair with some areas noticeably wet/damp likely caused by the damaged guttering. There were no visible signs of notable structural cracking and there was a large hole in the façade where the stairs had been previously demolished.

5.2 Former Sorting Office Building

The stairs on the rear of this building and what appeared to be a single storey area adjacent the stairs have previously demolished.

5.2.1 Steel Roof Structure

5.2.1.1 Externally the roof was only viewed from the MEWP and appeared to be in a reasonable condition. The roof appears to drain towards both the front and rear elevation. There was debris from previous demolition on the corner of the roof.

5.2.1.2 The roof structure comprises a metal deck supported on purlins running over the top of a steel frame. There appeared to be sufficient on plan bracing within the roof structure with vertical stability assumed to be provided by moment connections between the beams and columns.

5.2.1.3 The steel frame generally looked in reasonably good condition.

5.2.2 Fourth Floor/Roof

5.2.2.1 The floor is constructed from a clay hollow pot system spanning between steel beams. The south east portion remains as a roof with pop up lanterns

5.2.2.2 Along the north and south elevation there were signs of water ingress with staining etc to the underside of the floor structure and water damage to the concrete encasement to the steel columns.

5.2.2.3 There are two pop up roof lanterns within the southern section of the building. These appeared to be in poor condition with some of the steel structure exposed due to weathering of the concrete encasement. (refer to photo A60 in Appendix A)

5.2.2.4 There were several upstand beams which appeared to have been used for some lightweight plant/hoists.

5.2.2.5 The roof area appeared to be in a reasonable condition considering its age with only limited ponding in the visible areas. (refer to photo A61 in Appendix A)

5.2.2.6 The masonry parapet along the eastern façade appeared to be in a reasonable condition considering its age.

5.2.3 Third Floor

5.2.3.1 The floor is constructed from a concrete filler joist slab spanning between steel beams and appeared to be in a reasonable condition considering its age with suitable cover to the underside of the steel joists.

5.2.3.2 There was noticeable cracking to the soffit of the filler joist floor along the eastern façade. (refer to photos A87& A88 in Appendix A)

5.2.3.3 There appears to have been some modification works carried out within the northern corner with new steel beams added to the underside of the floor.

5.2.3.4 There is an existing circular void through the floor in the south eastern corner of the building.

5.2.4 Second Floor

5.2.4.1 The floor is constructed from a concrete filler joist slab spanning between steel beams and appeared to be in a reasonable condition with suitable cover to the underside of the steel joists

5.2.4.2 There is a step in the structural slab along the eastern façade towards the northern corner with what appeared to be drainage gullies. (refer to photos A79 & A80 in Appendix A)

5.2.4.3 The soffit of the slab within the south eastern corner appears to be of a different construction when compared to the rest of the building. This also appears to be the case on all other floors. (refer to photos A94 in Appendix A)

5.2.5 First Floor

5.2.5.1 The floor is constructed from a concrete filler joist slab spanning between steel beams and appeared to be in a reasonable condition with suitable cover to the underside of the steel joists

5.2.5.2 One of the steel beams over the access passageway is heavily corroded with delamination to the bottom flange. (refer to photo's A51, A52 & A53 in Appendix A)

5.2.5.3 Along the southern elevation there were signs of water ingress with staining to the underside of the floor structure. (refer to photo A103 in Appendix A)

5.2.5.4 There is an internal column that only has beams connected in one direction. This also appeared on all other floors. (refer to photo's A92 in Appendix A)

5.2.6 Ground Floor

5.2.6.1 An area in the north east corner of the building was not accessible at ground floor with any previous doorways blocked up. This area could be accessed from the basement and appeared to be in use by the adjacent building.

5.2.6.2 Areas of the ground floor above the basement are constructed from concrete filler joist slabs spanning between steel beams. These appeared to be in a reasonable condition with suitable cover to the underside of the steel beams.

5.2.6.3 Areas of the ground floor not above a basement appear to be constructed from a clay hollow pot system spanning between masonry dwarf walls.

5.2.6.4 Areas of the ground floor slab has been compromised during the demolition and have been left exposed to the elements. Piles of rubble have fallen into the basement around the area where an old chimney was demolished with holes boarded over allowing water to seep down into the basement.

5.2.6.5 Along the southern elevation there were signs of water ingress with staining to the top of the floor structure. (refer to photo A105 in Appendix A)

5.2.6.6 Within the south section of the floor area there were some signs of water ingress with water collecting on top of the floor. There did not appear to be any water entering from above so this may have been entering though the temporary covered up exposed rear facades. (refer to photo A103 in Appendix A)

5.2.7 Basement

5.2.7.1 The basement is split into two separate sections under the north and south of the building separated by the access passageway.

5.2.7.2 Based on the site walkaround, the north eastern basement only appears to cover approximately half the overall building footprint. There is a substantial amount of cabling running from the adjacent building, along the eastern wall exiting into the central courtyard and Edward Street.

5.2.7.3 Access was only available via an access hatch and ladder. There was approximately 1- 2 inches of water within the eastern basement at the time of the visit. Water staining to finishes implies that the water may have previously been higher.

5.2.7.4 The south eastern basement was flooded prior to the visit and could only be accessed after a couple days of continuous pumping although there was still approximately 1-2 inches of water at the time of the visit.

5.2.7.5 It appears that prolonged water exposure has caused the concrete encasement to several of the steel columns to deteriorate leading to corrosion to the encasement reinforcement. This was evident on columns in both north and south basements.

5.2.8 External Facades

5.2.8.1 The eastern and southern façade appeared to be in a reasonable condition considering the age of the building with only some local signs of weathering to areas of the stonework/brickwork. There were no visible signs of any notable cracking.

5.2.8.2 An area of the southern façade was visibly wet (refer to photos A41 & A42 in Appendix A)

5.2.8.3 The rear facades (within the central courtyard) appeared to be in a reasonable condition considering the age of the building. There are a few areas that have been left exposed with only temporary wooden boarding due to the previous demolition works (refer to photos A46 & A47 in Appendix A)

5.2.8.4 There were a number of steel joists left projecting from the building within the areas where the stairs had been demolished. These were typically at every floor level (refer to photos A49 & A50 in Appendix A)

6.0 Conclusions & Recommendations

6.1 Former Post Office Building

6.1.1 Primary Structure

6.1.1.1 The building generally appears to be of a robust construction and in a reasonably good condition with no visible major structural defects or issues.

6.1.1.2 Concrete filler joist floors constructed around 1900s used poor quality, weak and usually either a coke breeze concrete or clinker concrete which are both susceptible to water ingress. Visual inspection on site seemed to concur that both types are present within this building. The high levels of sulphate within the concrete can create strong acidity if it becomes moist and can cause corrosion to the steel/iron joists and usually is evident in the 'web' of the beams. Such corrosion causes much wider cracking to occur than the normal hairline cracking to the soffit of the slab. All opening up works completed to date suggest that the ground and first floor appear to be in a reasonable condition from the areas viewed on site. Allowances should be made for some further investigations if there are areas of substantial cracking on the underside once the finishes have been removed.

6.1.1.3 The second floor (and roof) appear to be constructed with 'clinker' concrete which is a relatively weak material that expands and softens in contact with moisture. This 'softening' process causes a lack of integrity. Whilst EWP did not encounter any areas that could easily be picked away with a screwdriver whilst on site, exposed steel joists and general honeycombing to the underside of the slab suggest that either pieces have come away previously, or it was poorly constructed. Further visual inspections should be undertaken once all finishes have been removed to confirm the long-term durability of the floor as well as its resistance to fire compared with today's requirements.

6.1.1.4 A section of the first floor was not accessible at the time of the visit. Whilst the exact condition of the floor slab in this area of the building is not known, based on observations throughout the building it would be reasonable to assume that it will be of similar condition to the rest of the first-floor slab. Nevertheless, this should be confirmed when access becomes available.

6.1.1.5 The investigations undertaken on site confirmed that there appears to be sufficient concrete cover (min 30mm) to the underside of the steel joists within the first floor to provide sufficient durability and fire resistance. The exposed soffits mentioned in 6.1.1.3 on the underside of the second floor will not provide sufficient protection and allowances should be made to protect the exposed steel beams. This is usually by reinstating the cover or adding a separate form of fire protection such as fire boarding.

6.1.1.6 In accordance with the Building Regulations Part A Disproportionate Collapse requirements, hotels, flats, apartments, and other residential buildings not exceeding 4 storeys are classed as Category 2A, which require effective horizontal ties or effective anchorage of suspended floors to walls/frames. Whilst the proposed change of use does not facilitate a change in the category, Building Regulations state that the change of use to a hotel provides increased risk to the public and that the building needs to be assessed and proven to comply with the latest regulations. It appears that the suspended floors are supported by the external masonry loadbearing walls and internal steel beams and columns. The ends of the steel joists bearing into the loadbearing masonry walls will need to be opened up in order to confirm the minimum bearing to comply with the disproportionate collapse requirements.

6.1.1.7 All beams within the dis-used lightwell along Abingdon Street that are supporting the external build up/finishes need sufficient corrosion protection. Whilst some repairs have previously been carried out there a still a number of steel beams with surface corrosion. It is recommended that these steel beams are replaced with galvanised steel beams.

6.1.1.8 The exposed ground floor over the assumed old lightwell on the eastern side of the basement may need replacing. The continual exposure to moisture (refer to 6.1.1.2) may have heavily corroded the steel joist and further investigation should be completed to confirm the exact extent of damage. Steel beams forming openings within the basement outer wall are heavily corroded and should either be replaced or removed with the holes suitably infilled.

6.1.1.9 The single storey building at ground floor to the rear of the main building is in a state of disrepair although there are no immediate structural concerns. The existing assumed steel roof trusses only appear to have mild surface corrosion with a low risk of inherent structural defects. The surfaces should be sufficiently cleaned and painted with a surface protection to prolong their long-term durability. The remnants of the roof structure supported by the trusses should be removed and replaced following the same principles (i.e. purlins spanning between trusses). There is a lack of on plan bracing within the roof structure and the building appeared to rely on the adjacent buildings for stability which has been compromised due to the demolition. If the building structure is to remain the stability will need to be analysed with an allowance at this stage for vertical bracing/masonry shear walls to be added/replaced.

6.1.1.10 The corner of the ground floor slab over the basement adjacent to the existing lift shaft (within single storey building) may need to be replaced. It is reasonable to assume that this would not have originally been designed with adequate concrete cover to protect from water and is likely to have corroded the assumed steel joists. It is recommended that further investigations are carried out to confirm the condition.

6.1.1.11 Water ingress to the ends of the steel beams supported by the western façade at ground floor level should be investigated to confirm where the source of the moisture is (may be due to the infill of the originally exposed light wells at ground level on Abingdon Street). Currently there is no immediate structural concern of the mild corrosion to the end of the beams. The situation should be interrogated and improved to avoid things getting worse.

6.1.1.12 Whilst there are no requirements to upgrade the existing structures per-se (initial discussions regarding the future use of building suggest that there will not be an increase to the original design load allowances), if substantial changes or additions are proposed in the future the consequential checking and upgrading of the existing structure may be required

6.1.1.13 The water level within the basement should be monitored with adequate temporary measure implemented to minimise water entering the building from the openings exposed after the demolition works. It is expected that the water consists entirely of rainwater coming through the door. If water levels increase or remain consistent after openings are closed up, then further investigations are required to confirm the source of the water.

6.1.1.14 The existing lift shaft appears in a reasonable condition although its stability may need to be reviewed subject to re-use with new modern lifts. It is expected that the lift pit will drain once the source of the water is controlled (see 6.1.1.11).

6.1.1.15 Whilst the corrosion to the underside of the steel plate lids of the tunnel only appeared to be mild, this will only deteriorate further causing concerns for its long durability. Strengthening works may also be required subject to landscaping build ups and loading within this area. Dependent on any plans for future us the tunnels could be infilled to avoid any future maintenance.

6.1.2 <u>Roof</u>

6.1.2.1 The roof is in poor condition with substantial amounts of damage or missing tiles across the whole roof, it would be beneficial to consider temporary short-term weatherproofing to minimise damage caused to the rest of the structure from prolonged water ingress.

6.1.2.2 The water ingress due to the condition of the roof appears to have caused corrosion to the majority of the filler joist roof with visible staining in all areas viewed during the survey. It is likely that a substantial (if not all) of the filler joist roofing may need replacing/strengthening. It is recommended that opening up works are completed with the concrete removed locally to expose the steel joist in the worst areas. The client may wish to consider retaining the main trusses but replacing the sections in between with say timber purlins and rafters.

6.1.2.3 The existing assumed steel roof trusses only appeared to have mild surface corrosion with a low risk of any inherent structural defects. The surfaces should be sufficiently cleaned and painted with a surface protection to prolong their long-term durability.

6.1.3 Façade

6.1.3.1 The Grade II listed façade's stone cladding appears to be in a reasonable condition with no visible structural concerns considering its age and only minor spalling in localised areas which will need repair. All local repairs should be carried out by an appropriate specialist contractor and discussed and approved with the conservation officer.

6.1.3.2 The rear façade masonry wall needs repairing where the stair well has demolished. The wall should be made good by closing of the ends of the walls with all bricks toothed in to match the existing construction. Dependant on the future design of this the façade will need to be closed with new exterior cladding.

6.2 Former Sorting Office Building

6.2.1 Primary Structure

6.2.1.1 The building generally appears to be of a robust construction and in a reasonably good condition with no visible major structural defects or issues.

6.2.1.2 All opening up works completed to date suggest that the first, second and third floor appear to be in a reasonable condition considering its age. Allowances should be made for some further investigations if there are areas of substantial cracking on the underside once the finishes have been removed. (Refer to 6.1.1.2 for detailed explanation of the concrete filler joist floors)

6.2.1.3 The area of filler joist floor slab over the basement in the location where the stairs used to be is in poor condition with some minor holes formed from falling debris. The exposure of the filler joist floor to moisture will likely have caused significant damage (refer to 1.2.1.2 for details). There was evidence of further cracking to the soffit and it should be assumed that a section of this floor will need to be replaced. Furthermore, if the area is to remain external in the future then this will need to be designed as a roof with allowances for landscape build ups and necessary waterproofing measures.

6.2.1.4 There are a number of different construction techniques for the clay hollow block floors which have evolved since the 1900s. They all utilise hollow blocks to reduce weight and form an in-situ ribbed slab. Reinforcement was predominantly used in the ribs with the concrete arching in between. It appears that the floor constructed at ground floor and roof uses the clay blocks and

a slip tile arrangement with in-situ concrete ribs and topping. The presence of tile slips to the underside provide a smooth surface to apply ceiling finishes, however they hide any potential defects. Problems with poor compaction of the concrete around any reinforcement at the base of the ribs would cause honeycombing (voids) and insufficient cover to the underside of the reinforcement. Any potential voids would reduce the fire resistance with reduced protection to the reinforcement. Only in the most severe cases does the honeycombing/voids effect the structural strength of the floor.

6.2.1.5 Based on what has been seen on site, it appears that the clay hollow block ground floor construction has only been used in areas where there is no basement below which negates any concern for its fire resistance. On the basis that the future use of building will not be higher than the original design load allowances, it is reasonable to assume the floor will be adequate, although further investigations should be undertaken to confirm the construction build ups and presence of reinforcement.

6.2.1.6 The localised water staining to the ground and first floor slab along the southern elevation may have been a result of issues with the external rainwater pipe. The rainwater pipe appears to have been repaired but it still looked to be an issue with gutter/hopper. If the water does not dry out, then further investigations are required to identify the source of the water. A small section of the first floor slab soffit should be broken away to confirm the floor structure (as it appeared different within this area of the building on every floor) and review if the prolonged exposure to water has caused any structural issues.

6.2.1.7 The area not accessible at ground floor in the northern corner adjacent the 'Exchange Building' should be checked to see if the adjoining owners have any contractual access to this area and basement.

6.2.1.8 In accordance with the Building Regulations Part A Disproportionate Collapse requirements, hotels, flats, apartments, and other residential buildings greater than 4 storeys but not exceeding 15 storeys are classed as Category 2B, which require effective horizontal ties or effective anchorage of suspended floors to walls/frames as well as vertical ties. Whilst the proposed change of use does not facilitate a change in the category, Building Regulations state that the change of use to a hotel provides increased risk to the public and that the building needs to be assessed and proven to comply with the latest regulations. On the basis that this is a steel frame with no loadbearing masonry walls, it is reasonable to assume that columns will either be continuous or spliced with adequate provision for the vertical tie force to allow the column to hang in the event of localised removal of a column. To confirm this, we will need to undertake opening up works locally removing the column encasement at the head/base of the column. It is

unlikely that the concrete filler joist floor will have horizontal ties to the beams or be continuous over them. We will need to undertake opening up works to confirm these fixing details. Should these confirm the floor to beam tie provision is not satisfactory to comply with the requirements then we will need to undertake a detailed desk based study. This will include calculations and a thorough review to ensure that on nominal removal of any beam and/or column, the building remains stable and that the area of floor at any storey at risk of collapse does not exceed 15% of the floor area with the approach and risk agreed with building control. If any areas of floor exceed this value then remedial ties will need to be added in these areas which don't satisfy the requirements. The remedial detail will also need to be agreed with Building Control.

6.2.1.9 There is an internal column within the northern area of the building that currently does not comply to Category 2B Disproportionate Collapse requirements as it is only tied in one direction. It is advised that additional tie beams are installed at every level in order to satisfy the requirements without having to carry out a rigorous risk analysis which is likely to involve unnecessary complex analysis.

6.2.1.10 The investigations undertaken on site confirmed that there appears to be sufficient concrete cover (min 30mm) to the underside of the steel joists within the concrete filler joist floor to provide sufficient durability and fire resistance.

6.2.1.11 Whilst there are no requirements to upgrade the existing structure per-se (initial discussions regarding the future use of building suggest that there will not be an increase to the original design load allowances), if substantial changes or additions are proposed in the future the consequential checking and strengthening of the existing structure may be required

6.2.1.12 The water ponding on the ground floor within the building is likely to be entering through the temporary boarding along the rear of the building. Further temporary measures should be implemented to stop water entering the building. If the water does not dry out, then further investigations are required to identify the source of the water.

6.2.1.13 The encasement to the steel columns should be locally removed in all areas where the concrete has begun to deteriorate and crumble away. The steel column should be inspected for any corrosion. If there is no overall loss to the section, then the column should be adequate cleaned of all surface corrosion and re-covered with a suitable protection to prolong their long-term durability. To remain consistent with other columns the recommendation would be to use D49 wrapping mesh and re-encase in concrete. If the corrosion has caused delamination and a loss to the overall section size, then the capacity of the column will need to be reviewed with possible strengthening required. The greatest risk of this will be within the basement where the load is the

highest and conditions were most unfavourable and further investigations should be undertaken.

6.2.1.14 The step-in floor slab on the second floor could be infilled if not required. It should be assumed that this will need to utilise a lightweight solution pending further review of the design load allowances.

6.2.1.15 It is assumed that the remaining steel joists projecting out from the building are a continuation of the internal floor structure. These need to be careful cut back with the ends treated with a suitable corrosion protection. These potentially also cause a thermal break issue and should be reviewed by an architect.

6.2.2 Roof

6.2.2.1 It is suspected that the clay hollow block construction at 4th floor may have originally been designed only for roof loadings. The limited desk study completed on this building to date is inconclusive if the steel roof structure was original, but it is reasonable to assume that this was a later addition. Further investigations should be undertaken to confirm the construction build ups and presence of reinforcement to confirm the capacity of this floor.

6.2.2.2 All exposed steel structure forming the pop-up roof lanterns should be adequate cleaned of all surface corrosion with a low risk of inherent structural defects. The surfaces should be sufficiently cleaned and painted with a surface protection to prolong their long-term durability. Alternatively, these lanterns could be removed with the roof infilled if they are not required for the future use of the building.

6.2.2.3 The steel roof frame appears to be of a robust construction and in a reasonably good condition with no visible major structural defects or issues.

6.2.2.4 Any roof plant should utilise any existing upstands/plant deck if possible, with design checks completed to ensure the steel beams can withstand the loadings.

6.2.2.5 Localised ponding on the roof may have been caused by debris on the roof and the arrangement of the plant upstands. It is recommended that the debris is removed. A specialist should be consulted to review the general condition and lifespan of the existing roof finishes.

6.2.3 External Façade

6.2.3.1 The eastern and southern façade appears to be in a reasonable condition considering its age with no visible structural concerns and only minor spalling/defects in localised areas. All local repairs should be in-keeping with the character of the building.

6.2.3.2 The northern façade above the 'Exchange Building' appeared to have some defects in and around the window which was moisture to enter the building. Further investigations should be undertaken from high level to identify the exact cause with any defects repaired/replaced.

6.2.3.3 New cladding is required along areas of the western facade at ground floor to close of the open ends of the building that have been left exposed following the demolition of the abutting buildings. Details of this will need to be confirmed by the architect. Additional sub-structure may be required in and around the hollow clay block floor construction as well as consideration to support and detail above the basement.

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Appendices

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Appendix A – Site Photo's

Photo A- 1- Grade II listed western facade

Photo A- 2 Eastern facade at rear of building

Photo A- 3 - Post box's and slabs over previous lightwell for the basement

Photo A- 4 - Localised weathering to areas of the stone façade typically at window level

Photo A- 5 - Ventilation voids into the basement along the northern facade

Photo A- 6 -Northern facade with remnants of flashing to demolished covered area

Photo A- 7- Damaged brickwork following demolition of stairwell

Photo A- 8 - Brickwork left hanging following demolition of stairwell

Photo A- 9 - Exposed slab over basement below with the doorway in the background which water was entering the building through

Photo A- 10 - Damaged guttering allowing rainwater to run down the external face of the walls

Photo A- 11 - Roof looking north showing the condition of the roof

Photo A- 12 - Roof looking south showing the condition of the roof

Photo A- 13 - Roof of rear single storey building

Photo A- 14 - Hipped end of roof structures showing concrete filler joist roof structure supported on the roof trusses

Photo A- 15 - Roof truss showing water ingress supported on external masonry wall

Photo A- 16 - Corrosion to roof filler joists

Photo A- 17 – Ceiling finished come away exposing filler joist roofing due to water ingress between the existing roof lights

Photo A- 18- Further example of roof ceiling finishes coming away assumed due to water ingress

Photo A- 19 - Remains of second floor around demolished stairwell

Photo A- 20 - Example of water ingress assumed due to condition of roof

Photo A- 21 - Previous opening up works identifying steel joists of concrete filler joist floor

Photo A- 22 - Bearing of 2nd floor joist into masonry wall

Photo A- 23 - Soffit to 2nd floor showing signs of prolonged water ingress

Photo A- 24 - Further water ingress along the southern elevation (2nd floor soffit of slab)

Photo A- 25 - Concrete encasement removed to review condition of second floor beam supported by the rear elevation

Photo A- 26 - Minor serviceability cracks to the concrete encasement around the second floor steel beams

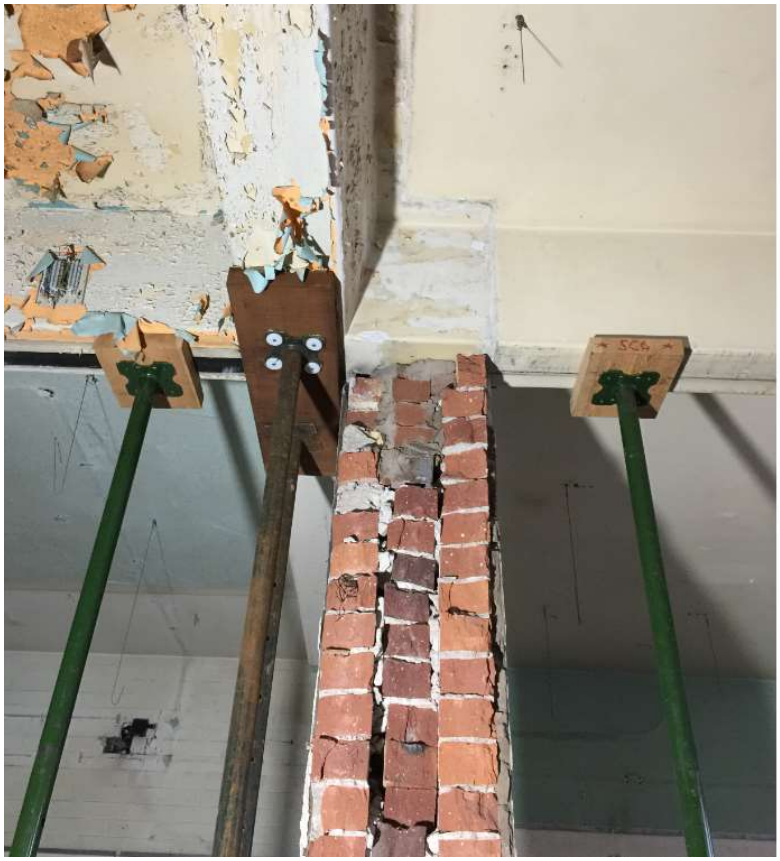

Photo A- 27 - Existing masonry pier with temporary props - appeared to be non-loadbearing TBC

Photo A- 28 - Previous opening up works, distinct different colour and texture to the concrete within the first-floor filler joists

Photo A- 29 - Bottom flange of steel joists exposed due to local 'pockets' to underside of second floor. Concrete appeared to be clinker

Photo A- 30 - Hole in 1st floor slab exposing the steel joist

Photo A- 31 - Ground floor ceiling

Photo A- 32 - Lift shaft looking from up from within the basement

Photo A- 33 - Basement area

Photo A- 34 - Previous lightwell area along Abbingdon Street