EXTERNAL FAÇADE REPORT

CASTLE EXCHANGE

41 BROAD STREET, NOTTINGHAM, NG1 3AP

Date carried out:	6th September – 7th September 2020
Report Number:	DB/2404/06092020 REV A

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Holistic Fire Safety Report Prepared and Authorised by:

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Date	01.12.2020
Signature	

The report is prepared following a site and desktop review of the property layout, materials used in the external wall construction in addition to consideration paid to the documents provided by the client requested prior to the survey.

** **Please note, this section of this report has not been undertaken unless signed otherwise and remains subject to further client instruction** **

Document Control

Version	Date of Issue	Issued By	Amendments
001	7th October 2020	Davinia Potterton	First Issue
001	9th October 2020	Ant Attree	Secondary Review
001	12th October 2020	Dorian Lawrence	QA Approval
002	1st December 2020	Adam Kiziak	Fire Engineer Report
003	26/01/2021	Davinia Potterton	Rev A

Table of Contents

1.0 Terms of Reference

1.1 **Mission Statement:**

1.1.1 True Love Property Management Love Property Management have instructed FR Consultants, to undertake an intrusive inspection of the external wall system and fixtures including all associated components on the property named CASTLE EXCHANGE to comment on the existing building materials with reference to the provisions set out in the Approved Documents applicable at the time of construction and make recommendations to remediate items of risk resulting from the MHCLG Guidance.

1.2 **Problem Statement:**

1.2.1 This investigation has been commissioned in response to the Ministry of Housing, Communities and Local Government (MHCLG) Building Safety Programme which covers high-rise residential buildings over 18 metres, including hotels, to make sure that residents of high-rise buildings are safe.

1.3 **Limitations:**

1.3.1 The data obtained in the investigation is limited to the findings in each precise location of inspection and cannot be used to confirm absolute consistency of the façade in its entirety.

1.3.2 All findings and comments are subject to any Building Control applications and approvals that have not been disclosed to FRC at the time of this report.

1.3.3 Product manufacturers cannot be confirmed with absolute certainty unless the sampled materials viewed show evidence of product branding. Where product branding is absent or ambiguous, FRC will refer to as built drawings and specification contained in the O&M manuals, but this does not constitute confirmation of the brand of the products used in construction. Where the products branding is absent FRC will state the expected combustibility-rating based on the known characteristics of the materials in use.

1.3.4 FRC have endeavoured to review sample areas from various elevations and levels, however, the ability to do was subject to uncontrollable factors, such as weather conditions. Such issues will be qualified in this report.

1.3.5 The supporting evidence provided in this report has been selected to substantiate the statements made within its content.

1.3.6 Our report will state areas of compliance with advisory sub-clauses of the relevant ADB. This does not guarantee compliance with the mandatory clause of B4(1) and our comments cannot be interpreted as such.

1.4 **Specific Issues to be Addressed:**

1.4.1 To comment on whether the construction of the External Wall and all its components are likely to comply with the Mandatory Requirement B4(1) of the Building Regulations and the MHCLG Guidance.

1.4.2 To comment on likely combustibility rating of the materials used in the construction of the façade and balconies and all their components.

1.5 **Desired outcomes:**

1.5.1 To comment on quality of workmanship of the external wall system installation and to provide recommendations of remedial works to bring any items of concern in line with the Mandatory Requirement B4(1) of the Building Regulations.

1.5.2 To provide comment on the combustibility rating of the materials used in the construction of the façade and provide recommendations of remedial works to bring any items of concern in line with current Building Regulations and MHCLG Guidance.

2.0 Scope of Works

2.1 Investigate each type of facade construction in sample areas, having regard to access restrictions.

2.2 Remove façade material in several areas as detailed below to enable review of the construction to those areas and expose Cavity Barriers, insulation, sub-base and membrane. Opening of the façade may be preferable to taking samples.

2.3 To carry out sampling of areas clad with a temporary mill finish aluminium panels (not colour-matched).

2.4 To comment on type and combustibility of cladding, insulation, membrane, sub-base materials and fixings / retainers used etc.

2.5 To comment on construction and presence of Cavity Barriers to inspection locations where they are required and include any remedial works required.

2.6 To comment on any other fire risks identified to the external facades.

2.7 To comment on the general workmanship of the construction of the façade where concerns are noted

2.8 To carry out a review of the O & M manuals, if available

2.9 To produce a report including technical data sheets where available and recommendations for remedial works.

2.10 Supply all sundries to carry out the investigations, such as rivets, fixings etc.

3.0 The Building Act and Building Regulations

3.1 The relevant statute law is the Building Act 1984. Under this Act Building Regulations are made.

3.2 The Building Regulation relevant to cladding is B4(1).

3.3 This provides a mandatory obligation at B4(1) which has required (from at least 2000) that:

"*the external walls of a building shall adequately resist the spread of the fire over the walls and from one building to another having regard to the height, use and position of the building.*"

3.4 It is this standard that the cladding is to be judged against.

3.5 The Approved Document regime, the ADB, is guidance.

3.6 Section 7 of the Building Act 1984 states that:

"*A failure on the part of a person to comply with an approved document does not of itself render him liable to any civil or criminal proceedings; but if, in any proceedings whether civil or criminal, it is alleged that a person has at any time contravened a provision of building regulations-*

a. a failure to comply with a document that at that time was approved for the purposes of that provision may be relied upon as tending to establish liability; and
b. proof of compliance with such a document may be relied on as tending to negative liability."

3.7 We understand from legal advisers that this means that following an approved document does not mean compliance is assured but gives rise to a presumption only.

3.8 The ADB is therefore guidance. Non-compliance with that guidance is, on the face of it, evidence of non-compliance with the Building Regulations.

3.9 We also understand form legal advisers that the mandatory requirement of B4(1) makes no reference to the height of a building. The references to 18m are contained in the guidance and therefore appear to constitute additional guidance for buildings of that height.

3.10 There are four principle ways of seeking to achieve compliance with B4(1): -

a. Approved Document B ("ADB") to the Building Regulations: paragraphs 12.5-12.9 of that guidance
b. A full engineered fire solution report
c. A desktop study
d. A British Standards test commissions by the Building Research Establishment (BRE): BS 8414 test

3.10.1 These are set out both in the ADB and in the BCA (Building Control Alliance) guidance as Technical options.

3.11 **ADB Route:**

3.11.1 The ADB guidance on how compliance can be achieved is set out in Approved Document B at Paragraphs 12.5-12.9.

3.11.2 Paragraph 12.3 of ADB states that external walls of buildings other than those described in regulation 7(4) of the Building Regulations should achieve either of the following:

a. *"Follow the provisions given in paragraphs 12.5 to 12.8, which provide guidance on all of the following:*
   i. *External surfaces.*
   ii. *Materials and products.*
   iii. *Cavities and cavity barriers.*
b. *Meet the performance criteria given in BRE report BR 135 for external walls using full-scale test data from BS 8414-1 or BS 8414-2.*

3.11.2.1 The latter is a reference to the BS 8414 test, discussed in more detail below.

3.11.3 ADB 12.1 sets the scene:

"The external wall of a building should not provide a medium for fire spread if that is likely to be a risk to health and safety. Combustible materials and cavities in external walls and attachments to them can present such a risk, particularly in tall buildings."

3.11.4 ADB 12.5 concerns fire surface spread. ADB 12.5 also refers to Table 12.1 Reaction to fire performance of external surface of walls. It is this table which notes the issue of 18m tall buildings and states the European Class requirement in respect of materials as follows:

a. Buildings Less than 1000mm from the relevant boundary are to contain materials of Class B-s3, d2(2) or better.
b. Buildings 1000mm or more from the relevant boundary are to contain materials of:
   i. From ground level to 18m: class C-s3, d2(3) or better
   ii. From 18m in height and above: class B-s3, d2(2) or better

3.11.5 ADB 12.6 concerns combustibility. ADB 12.6 says:

"In a building with a storey 18m or more…any insulation product, filler material (such as the core materials of metal composite panels, sandwich panels and window spandrel panels but not including gaskets, sealants and similar) etc. used in the construction of an external wall should be class A2-s3, d2 or better …"

3.11.6 Whether a product is of limited combustibility is determined by reference to British and European standards measuring its combustibility.

3.11.7 For Buildings over 18m with a combustible insulation or filler product, the ADB route cannot therefore have been validly used.

3.11.8 Paragraph 12.8 provides that Cavity barriers should be provided in accordance with Section 5 in welling houses and Section 8 in flats.

3.12 **Desktop Reports:**

3.12.1 These are now not widely available. Their use has been subject to a lot of criticism since the Grenfell tower tragedy. Whilst they were used extensively prior to this, they often over-relied on test results of other systems and did not properly assess the risks of changes or differences between systems and how those changes may affect the outcome of a test or the fire safety of the system overall.

3.13 **Fire Engineered Solutions:**

3.13.1 These are rarely used as a route to compliance and are expensive. They are normally reserved for difficult buildings where a detailed overall strategy is arrived at to overcome what would otherwise be compliance issues. They are therefore normally discussed in detail with Building Control officers.

3.14 **BS 8414 test:**

3.14.1 This is a test carried out by BRE on an 8-metre-tall mock-up of the cladding/façade system. A fire is lit at the base of the mock-up and its resistance to fire is established by a series of metrics set out in the document BR 135. This test has been widely adopted as the most certain way of showing compliance or non-compliance with B4(1).

3.14.2 The test should run for thirty minutes to allow the evaluation criteria of BR 135 to be applied. The test generates heat or temperature results which can then be measured and assessed.

3.15 **Applicable Building Regulations:**

3.15.1 The approved planning application, reference 02/02746/LCAC1 was validated by Nottingham City Council on the 16th January 2003 for demolition of link building and outbuildings to facilitate 12 storey residential development Castle Exchange sits within the boundaries of Nottingham City Councils 'lace Market' conservation area. The Building Regulations in existence with Castle Exchange is therefore the 2000 Approved Document B, with 2002 Amendments.

3.15.2 Regarding External Surfaces, the Building Regulations 2000 clause 13.5 states: *"The external surfaces of walls should meet the provisions in Diagram 40. However, the total amount of combustible material may be limited in practice by the provisions for space separation in Section 14 (see paragraph 14.7 et seq).*

Where a mixed use building includes Assembly and Recreation Purpose Group accommodation, the external surfaces of walls should meet the provisions in Diagram 40c."

3.15.3 *"Note: One alternative to meeting the provisions in Diagram 40 could be BRE Fire Note 9 Assessing the fire performance of external cladding systems: a test method (BRE, 1999)."*

3.15.4 13.6 also outlines: "*In the case of the outer cladding of a wall of 'rainscreen' construction (with a drained and ventilated cavity), the surface of the outer cladding which faces the cavity should also meet the provisions of Diagram 40."*

3.15.5 Regarding external wall construction, the Building Regulations 2000 13.7 says: *"The external envelope of a building should not provide a medium for fire spread if it is likely to cause a risk to health & safety. The use of combustible materials for cladding framework, or of combustible thermal insulation as an overcladding or in ventilated cavities, may present such a risk in tall buildings, even though the provisions of diagram 40 may have been satisfied.*

3.15.6 *"In a building with a storey 18m or more above ground level, insulation materials used in ventilated cavities in the external wall construction should be of limited combustibility".*

3.15.7 The ADB also includes section 10: Cavities, which specifies the requirements of cavity barriers. It is summarised within clause 10.1: *"Concealed spaces or cavities in the construction of a building provide a ready route for smoke and flame spread. This is particularly so in the case of voids above other spaces in a building, e.g. above a suspended ceiling or in a roof space. As any spread is concealed, it presents a greater danger than would a more obvious weakness in the fabric of the building. Provisions are made to restrict this by interrupting cavities which could form a pathway around a barrier to fire, sub-dividing extensive cavities, and closing the edges of openings."*

3.15.8 *"Note: Cavity barriers are not appropriate for use above compartment walls (see paragraph 10.5). See also 'Limitation on requirements' on page 7 which explains the purpose of provisions made in connection with Building Regulations."*

3.15.9 *"**Note on cavities in rain screen cladding and the like**: Cavities within an external wall are referred to in this Section, including the drained and ventilated cavities behind the outer cladding in 'rainscreen' external wall construction. There are also provisions in paragraphs 13.6 and 13.7 about the construction of external walls which have a bearing on overcladding and rainscreen construction."*

3.15.10 The ADB also includes Diagram 31 and Diagram 32 regarding the provision of Cavity Barriers.

3.15.11 Section 10.6 – 10.9 Outlines the potential options for cavity stopping. 10.6 states – "*Every cavity barrier should be constructed to provide at least 30 minutes fire resistance (see Appendix A, Table A1, item 16). However, cavity barriers in a stud wall or partition may be formed of:*

a. steel at least 0.5mm thick; or

b. *timber at least 38mm thick; or*

c. *polythene sleeved mineral wool, or mineral wool slab, in either case under compression when installed in the cavity; or*

d. *calcium silicate, cement based or gypsum-based boards at least 12.0mm thick.*

Note: Cavity barriers provided around openings (see Table 13, item 10) may be formed by the window or door frame."

3.15.12 The guidance notes within the Approved Documents are to be considered as advisory, and compliance with these guidance notes, should be viewed as a 'rebuttable presumption'. Mandatory requirement B4(1) relating to the performance of the external walls has not changed in any revision of the Building Regulations. Requirement B4(1) states – *"The external walls of the building should adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building."*

3.15.13 The Building Regulations and the associated guidance notes in the Approved Document B concerning acceptable materials used in the construction of facades were revised in 2019.

3.16 **Government Advice Notes:**

3.16.1 In 2017 the Ministry of Housing, Communities and Local Government (MHCLG) established the Building Safety Programme to cover high-rise residential buildings over 18 metres, including hotels, to make sure that residents of high-rise buildings are safe.

3.16.2 With the support of local fire and rescue services and a panel of independent expert advisers, MHCLG is supporting building owners in taking immediate steps to ensure their residents' safety and in making decisions on any remedial work that is necessary to do.

3.16.3 The programme is working with building owners, housing providers, schools, hospitals, and the construction industry, including an Industry Response Group.

3.16.4 The Building Safety Programme have issued Advice Notes to provide advice on the use of materials in construction.

3.16.5 Of interest to organisations involved in issues pertaining to façades and external walls of residential buildings of 18m or more (although the principles may also apply to other building types) are the following advice notes:

3.16.6 The MHCLG Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings released 20th January 2020 is of interest to organisations involved in issues pertaining to façades and external walls of residential buildings of all height. This advice note refers to the following subjects:

a. HPL systems

b. Balconies
c. Spandrel panels/window panels/infill panels on external walls
d. Aluminium Composite Material (ACM) cladding systems
e. External Wall Insulation (EWI) systems with a render or brick-slip finish

3.16.7 The MHCLG Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings does not reference historical Building Regulations and compliance to Government Advice Notes is considered 'as of now'.

3.16.8 Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings (**Appendix C**) is a consolidation of all previous advice notes with more stringent criteria based upon further research as the external wall fire safety landscape expands, saying: *"This advice represents the Expert Panel's position on the action that building owners should be taking immediately to address the risk of fire spread from unsafe external wall systems, and also covers other issues that have neem previously the subject of Advice Notes. We are aware that some building owners have been waiting to act on building safety issues, in case further advice or information is to be published by the Expert Panel or the Government. For the avoidance of doubt, building owners should follow the steps in this advice as soon as possible to ensure the safety of residents and not await further advice or information to act."*

3.16.9 *"Following recent events, the Expert Panel has significant concerns that consideration is not routinely given to Requirement B4 of Schedule 1 to the Building Regulation (on external walls resisting the spread of fire), particularly in circumstances where the guidance in Approved Document B is less specific. Requirement B4 is clear and requires that 'the external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and location of the building.' **The need to assess and manage the risk of external fire spread applies to buildings of any height."***

3.17 From 21st December 2018, **only materials with a European combustibility rating of Euroclass A1/A2** will satisfy the new regulations for façade and external wall construction on certain buildings including residential dwellings. The table below demonstrates the typical Euroclass ratings of various building materials.

Euroclass Rating	Definition	Example Materials
A1	Non-Combustible	Mineral Wool, Concrete, Plain Aluminium, Masonry Brickwork
A2	Limited Combustibility	Powder Coated Aluminium Cladding
B-s3, d2 (or better)	Combustible	Phenolic foams, ACM
C-s3, d2 (or better)	Combustible	Phenolic foams, HPL
D-s3, d2 (or better)	Combustible	PIR, ACM, HPL (High Pressure Laminate) Untreated Timber
E-s3, d2 (or better)	Combustible	FR EPS (Expanded Polystyrene) Render, PUR
F-s3, d2 (or better)	Combustible	Standard EPS Render, PIR (Polyisocyanurate),

3.18 Table B1 is also included in the Approved Document B 2019 Edition (**Appendix B**) to provide guidance on the correlation between Euroclass and National Class ratings:

Table B1 Reaction to fire classifications: transposition to national class

BS EN 13501-1 classification	Transposition
A1	Material that, when tested to **BS 476-11**, does not either: a. flame b. cause a rise in temperature on either the thermocouple at the centre of the specimen or in the furnaces
A2-s1, d0	None
A2-s3, d2	Material that meets either of the following. a. Any material of density 300kg/m^3 or more, which, when tested to **BS 476-11**, complies with both of the following: i. does not flame ii. causes a rise in temperature on the furnace thermocouple not exceeding 20°C b. Any material of density less than 300kg/m^3, which, when tested to **BS 476-11**, complies with both of the following: i. does not flame for more than 10 seconds ii. causes a rise in temperature on the thermocouple at the centre of the specimen or in the furnace that is a maximum of 35°C and on the furnace thermocouple that is a maximum of 25°C
B-s3, d2	Any material that meets both of the following criteria. a. Class 1 in accordance with **BS 476-7**. b. Has a fire propagation index (I) of a maximum of 12 and sub-index (i1) of a maximum of 6, determined by using the method given in **BS 476-6**. Index of performance (I) relates to the overall test performance, whereas sub-index (i1) is derived from the first three minutes of the test
C-s3, d2	Class 1 in accordance with **BS 476-7**
D-s3, d2	Class 3 in accordance with **BS 476-7**

4.0 O&M's and As-Built Information

4.1 Electronic O&M (Operations & Maintenance) Manuals and As-Built information was requested following acknowledgement of the Instruction to Survey and again upon submission of our OSR (On-Site Requirements) form with a view to considering and commenting on this information as part of our report. At the time of writing this report, despite these requests, no information has been made available to us to reference within.

4.2 However, it was possible for the surveyor to access drawings and plans relating to the original planning application. The following drawings were used to reference against to validate considerations and comments within the report.

4.3 Drawing number (01)02 Apartments Castle Exchange- Nottingham Existing Elevations 27.10.02

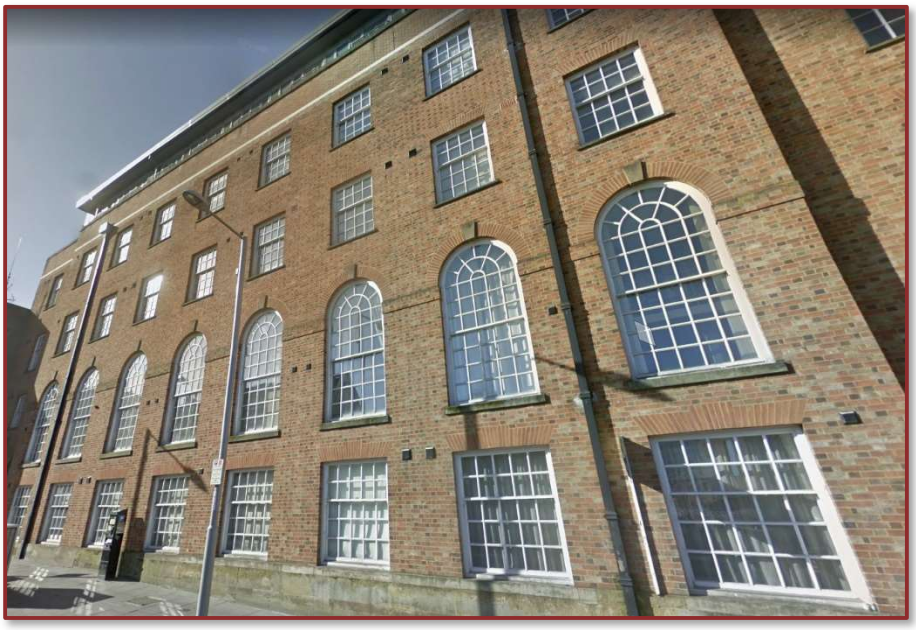
Drawing Number (08)04 Apartments Castle Exchange- Nottingham Elevations 27.12.02

5.0 Site Plan

The above image demonstrates the area covered by the property.

6.0 Elevations

North West facing elevations to Castle Exchange consisting of balconies and aluminium curtain walling system



East facing elevations to Castle Exchange consisting of glazing and masonry.

West facing elevations to Castle Exchange consisting of glazing, masonry and curtain walling system

South facing elevations to Castle Exchange consisting of glazing, masonry and render

7.0 Introduction

7.1 The inspection was carried out over 6th September – 7th September 2020 . The location of the survey was Castle, 41 BROAD STREET, NOTTINGHAM, NG1 3AP . Located on the site is a 5 and 8-storey block of residential apartments. The maximum height of the building is estimated to be approximately 24.00m, with a habitable top story level calculated to be approximately 21.00m to the slab level of the uppermost floor. Subsequently, it does contain a full habitable storey above 18m in line with parts of Approved Document B 2000 (**Appendix A**). It is still considered under the MHCLG Guidance (**Appendix C**).

7.2 A total of 14 areas were inspected on the day from areas identified as of interest from satellite imagery and as outlined in our initial proposal FRC2404

8.0 Observations

8.1 Inspection Summary: - AREA 1

LOCATION OF INSPECTION	
Floor Level	4
Height of Inspection	Approximately 12.0m
Elevation Facing	North
SURFACE MATERIALS	
Element/System	Spandrel Panel
Type	PPC Aluminium
Manufacturer (Product)	Unidentified
Does the panel have a core material	Yes – See Insulation (Core)
Does the panel have a tested fire rating	Euroclass A2 (Surface Materials)
SUPPORT FRAMEWORK	
Material	Aluminium
Type	Vertical Retainer and Rail System
INNER LEAF	
Type	Galvanized Aluminium
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass A1
INSULATION (CORE)	
Type	PIR Rigid Foam
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass E
INSULATION (CAVITY)	
Type	None
Manufacturer (Product)	N/A
Combustibility Rating	N/A
CAVITY BARRIERS	
Vertical at compartment walls	N/A
OTHER	
Description	None
Manufacturer	N/A
Combustibility Rating	N/A
SYNOPSIS	
Has the system been installed in accordance with ADB?	No
Are remedial works Recommended?	Yes

8.1.1 Photographic Evidence for – AREA 1

1A

1B

1C

1D

8.1.2 **Findings:**

8.1.2.1 Area 1 was an intrusive inspection undertaken to the external spandrel panel on the 4th-floor of the North facing elevation **(see photo 1A).**

8.1.2.2 The spandrel face was found to be a 2mm aluminium product that has been applied to 25mm thick PIR rigid foam insulation, ***(see photo 1D)*** which was mounted to the structure within the curtain walling system. ***(see figure 1).***

8.1.2.3 Behind the PIR insulation was a second 2mm aluminium plate ***(see photo 1D).*** The operative did not take the drill test any further due to the possibility of damaging the internal wall of the apartment.

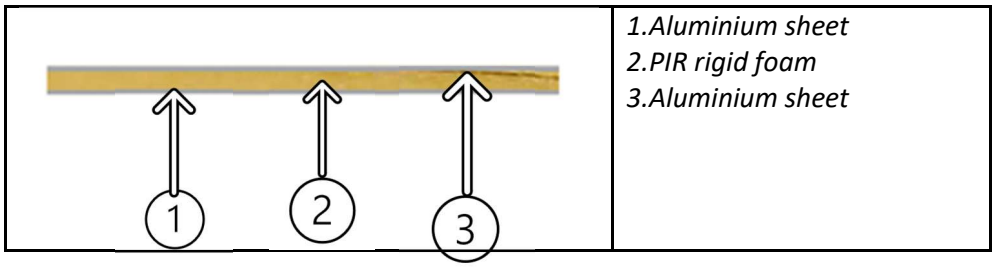


Figure 1

8.1.3 **Regulations:**

8.1.3.1 The mandatory clause of Building Regulations ADB 2000, B4. (1) states: *"The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building."*

8.1.3.2 Regarding External Surfaces, the Building Regulations 2000 clause 13.5 states: *"The external surfaces of walls should meet the provisions in Diagram 40. However, the total amount of combustible material may be limited in practice by the provisions for space separation in Section 14 (see paragraph 14.7 et seq). Where a mixed-use building includes Assembly and Recreation Purpose Group accommodation, the external surfaces of walls should meet the provisions in Diagram 40c."*

8.1.3.3 *"Note: One alternative to meeting the provisions in Diagram 40 could be BRE Fire Note 9 Assessing the fire performance of external cladding systems: a test method (BRE, 1999)."*

8.1.3.4 13.6 also outlines: "*In the case of the outer cladding of a wall of 'rainscreen' construction (with a drained and ventilated cavity), the surface of the outer cladding which faces the cavity should also meet the provisions of Diagram 40."*

8.1.3.5 Regarding external wall construction, the Building Regulations 2000 13.7 says: *"The external envelope of a building should not provide a medium for fire spread if it is likely to cause a risk to health & safety. The use of combustible materials for cladding framework, or of combustible thermal insulation as an overcladding or in ventilated cavities, may present such a risk in tall buildings, even though the provisions of diagram 40 may have been satisfied.*

8.1.3.6 *"In a building with a storey 18m or more above ground level, insulation materials used in ventilated cavities in the external wall construction should be of limited combustibility".*

8.1.3.7 In relation to thermoplastic insulation materials the Approved Document B 2002 Appendix A paragraph 18 provides, *"A thermoplastic material in isolation cannot be assumed to protect a substrate, when used as a lining to a wall or ceiling. The surface rating of both products must therefore meet the required classification. If, however, the thermoplastic material is fully bonded to a non-thermoplastic substrate, then only the surface rating of the composite will need to comply."*

8.1.3.8 The Evidence we have seen, due to the bonding of the thermoplastic PIR rigid foam insulation within the spandrel system suggests that the advisory provisions of the ADB have been followed. However, due to the combustibility of the materials installed, we do not think the building facade construction will suitably pass a BS8414-2 test and therefore, we suggest would also not comply with the mandatory clause within the Building Regulations, namely B4(1).

8.1.4 **MHCLG Advice Notes:**

8.1.4.1 According to diagram 1 of the MHCLG document Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings ***(see Appendix D)***, the advised course of action is as follows:

8.1.4.2 If the external wall insulation is not of European Class A2-s3,d2 or better;

and

8.1.4.3 If the external wall system is not in line with one that has achieved a BR135 classification via a BS8414 test

Then

8.1.4.4 Seek urgent professional advice on the measure(s) that need to be taken to ensure that the external walls meet an appropriate standard of fire safety. This may involve the **replacement of some or all of the materials in the external wall**. As part of the development of these measures, assess whether cavity barriers and fire stopping have been installed correctly, and whether the system has been maintained appropriately. **Consider whether short-term interim safety measures are required**. Carry out any remedial works required and update your fire risk assessment following the works.

8.1.5 **Recommendation:**

8.1.5.1 Due to the presence of the Combustible Insulation, in accordance with the guidance released by the MHCLG within the consolidated Advice Note January 2020, a Holistic fire Safety review should be undertaken by a Fire Engineer, registered with the Institute of Fire Engineers, and with experience in High Rise Blocks, considering the potential requirement for a change in the fire strategy and interim measures as a result of the materials used within the construction. This holistic review considers the external wall construction in conjunction with the internal provisions and will also further advise on definitive remediation measures.

8.1.5.2 Due to the existence of the PIR rigid insulation within the spandrel panel, the spandrel panel should be removed and replaced with a suitable alternative which achieves Euroclass A2 or better or a BR135 classification via a BS8414-2 test, in accordance with the advice contained within the MHCLG Guidance and to ensure compliance with Building Regulation B4 (1).

8.1.6 **Fire Engineer Review:**

8.1.6.1 Due to the presence of combustible PIR foam insulation behind the spandrel panels, we concur with the findings of the FRC report, and our advice is that the system should be removed and replaced with a system of materials rated to Euroclass A2 or better.

8.2 Inspection Summary: - AREA 2

LOCATION OF INSPECTION	
Floor Level	1
Height of Inspection	Approximately 7.00m
Elevation Facing	East
STRUCTURE	
Element/System	Brickwork
Type	Traditional
Thickness	Drill test was terminated at 300mm
Combustibility Rating	Euroclass A1
INNER STRUCTURE	
Material	None
Type	N/A
Combustibility Rating	N/A
INSULATION	
Type	None
Manufacturer (Product)	N/A
Combustibility Rating	N/A
CAVITY CLOSER	
How is the Cavity Closed at the Opening?	Solid Masonry
ADDITIONAL SURFACE FINISH	
Is there an additional surface finish?	No
Manufacturer (Product)	N/A
REMEDIATION	
Are remedial works recommended?	No

8.2.1 Photographic Evidence for - AREA 2

2A

2B

2C

2D

2E

2F

8.2.2 **Findings:**

8.2.2.1 Area 2 was a drill test inspection carried out from the 1st floor roof East facing elevation of the original 1900 building (***see photos 2A and 2B***).

8.2.2.2 The construction was found to be a Flemish bond, solid brickwork, the drill test was terminated at 300mm (***see photos 2D and 2E***).

8.2.2.3 A secondary hole was drilled on the angle towards the window section to confirm how the cavity was closed to the opening. Again, solid masonry could be identified from the endoscope footage within the edge of the cavity (***see photo 2F***).

8.2.2.4 Following the inspection, the mortar joint was sealed with waterproof mastic following the completion of works.

8.2.3 **Regulations:**

8.2.3.1 Due to the age of the building, Building Regulations did not come into force until 1964. Consequently, at the time of construction this section of Castle Exchange would have been exempt from relatable standards.

8.2.3.2 As the location is constructed fully with non-combustible masonry, whilst the construction would not have been subject to the 2000 Provisions, we have no concerns that the construction would not offer suitable performance to comply with the mandatory clause contained within, namely B4(1).

8.2.4 **MHCLG Advice Notes:**

8.2.4.1 According to diagram 1 of the MHCLG document Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings ***(see Appendix D)*****,** the advised course of action is as follows:

8.2.4.2 If the external walls are of European Class A2-s2,d2 or better; then

8.2.4.3 *Take reasonable measures to confirm that your system was installed correctly, including cavity barriers and fire stopping, and has been maintained appropriately. Update your fire risk assessment and ensure appropriate fire safety measures are in place. Where these measures cannot appropriately mitigate health and safety risks, seek urgent professional advice on the additional measures that need to be taken to ensure that the external walls meet an appropriate standard of fire safety. Consider whether short-term interim safety measures are required. Where this requires the replacement of combustible materials in the external wall system this action should be taken with due urgency.*

8.2.5 **Recommendation:**

8.2.5.1 Due to the solid masonry construction and the absence of any materials of a combustible nature, there are no recommendations within this location

8.2.6 **Fire Engineer Review:**

8.2.6.1 Having reviewed the materials present, we are satisfied that no remedial works are required. The external façade material is brickwork. Whilst a combustible insulation is present behind this. The risk of fire spread is seen to be low when taking into account the non-combustible construction of the external and internal walls, we are satisfied that a reasonable level of safety is provided. As the insulation within the external wall build up is contained with two leaves of masonry construction, no remedial action is required.

8.3 Inspection Summary: - AREA 3

LOCATION OF INSPECTION	
Floor Level	2
Height of Inspection	Approximately 11.00m
Elevation Facing	East
STRUCTURE	
Element/System	Brickwork
Type	Traditional
Thickness	280mm
Combustibility Rating	Euroclass A1
INNER STRUCTURE	
Material	Concrete
Type	Blockwork
Combustibility Rating	Euroclass A1
INSULATION	
Type	None
Manufacturer (Product)	N/A
Combustibility Rating	N/A
CAVITY CLOSER	
How is the Cavity Closed at the Opening?	Solid masonry
ADDITIONAL SURFACE FINISH	
Is there an additional surface finish?	No
Manufacturer (Product)	N/A
REMEDIATION	
Are remedial works recommended?	No

8.3.1 Photographic Evidence for - AREA 3

3A

3B

3C

3D

3E

3F

8.3.2 **Findings:**

8.3.2.1 Area 3 was a drill test inspection carried out from the 2nd floor east facing elevation of the original building (***see photos 3A and 3B***).

8.3.2.2 The construction was found to be a Flemish bond 240mm brickwork (***see photo 7D***) which was in front of a 110mm empty cavity ahead of the internal blockwork wall (***see photos 3C and 3D***).

8.3.2.3 Following the inspection, the mortar joint was sealed with waterproof mastic following the completion of works.

8.3.3 **Regulations:**

8.3.3.1 Due to the age of the building, Building Regulations did not come into force until 1964. Consequently, at the time of construction this section of Castle Exchange would have been exempt from relatable standards.

8.3.3.2 As the location is constructed fully with non-combustible masonry, whilst the construction would not have been subject to the 2000 Provisions, we have no concerns that the construction would not offer suitable performance to comply with the mandatory clause contained within, namely B4(1).

8.3.4 **MHCLG Advice Notes:**

8.3.4.1 According to diagram 1 of the MHCLG document Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings ***(see Appendix D)*****,** the advised course of action is as follows:

8.3.4.2 If the masonry walls are of European Class A2-s2,d2 or better

Then

8.3.4.3 *Take reasonable measures to confirm that your system was installed correctly, including cavity barriers and fire stopping, and has been maintained appropriately. Update your fire risk assessment and ensure appropriate fire safety measures are in place. Where these measures cannot appropriately mitigate health and safety risks, seek urgent professional advice on the additional measures that need to be taken to ensure that the external walls meet an appropriate standard of fire safety. Consider whether short-term interim safety measures are required. Where this requires the replacement of combustible materials in the external wall system this action should be taken with due urgency.*

8.3.5 **Recommendation:**

8.3.5.1 Due to the solid masonry construction and the absence of any materials of a combustible nature, there are no recommendations within this location

8.3.6 **Fire Engineer Review:**

8.3.6.1 Having reviewed the materials present, we are satisfied that no remedial works are required. The external façade material is brickwork. The risk of fire spread is seen to be low when taking into account the non-combustible construction of the external and internal walls, we are satisfied that a reasonable level of safety is provided, no remedial action is required.

8.4 Inspection Summary: - AREA 4

LOCATION OF INSPECTION	
Floor Level	3
Height of Inspection	Approximately 10.0m
Elevation Facing	South
STRUCTURE	
Element/System	Balcony
Type	Roof Terrace
Manufacturer (Product)	Unidentified
BALUSTRADE	
Material	Steel
Type	Railings
Combustibility Rating	Euroclass A1
SUPPORT FRAMEWORK	
Material	Steel
Type	Frame
Combustibility Rating	Euroclass A1
RAILINGS	
Type	Steel
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass A1
DECKING	
Type	Concrete Paving Slabs
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass A1
SOFFIT	
Type	Concrete
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass A1
SYNOPSIS	
Has the system been installed in accordance with ADB?	Yes
Are remedial works recommended?	No

8.4.1 Photographic Evidence for – AREA 4

4A

4B

4C

4D

4E

4F

4G

8.4.2 **Findings:**

8.4.2.1 Area 4 was a non-intrusive visual inspection carried out to the 3rd floor terrace on the South facing elevation ***(see photo 4A).***

8.4.2.2 The roof terrace was formed as part of the existing roof construction with a masonry parapet wall with concrete capping to form the upstand, with a steel frame, bolted back to the building structure with a steel handrail and steel balustrade (***see photos 4C and 4D***).

8.4.2.3 The floor of the roof terrace we assume was a poured concrete slab which had been decked with 450 x 450mm concrete paving slabs. The operative noted the paving slabs were on legs sitting on blue insulation (***see photos 4B and 4G***). The insulation was not identified and will require further investigation.

8.4.3 **Regulations:**

8.4.3.1 The mandatory clause of Building Regulations ADB 2000, B4. (1) states: *"The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building."*

8.4.3.2 There are no provisions regarding balconies which do not constitute part of a fire escape.

8.4.3.3 In our opinion due to the performance of the materials used in the construction, the terrace would not assist in the spread of flame over the external wall and subsequently, would satisfy the requirements of B4(1).

8.4.4 **MHCLG Advice Notes:**

8.4.4.1 Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings (**Appendix C**) state, *" External walls of buildings, of any height, should not assist the spread of fire, in accordance with the functional Requirement B4 of Schedule 1 to the Building Regulations. Balconies made with combustible materials are a potential source of rapid fire spread on the external wall of residential buildings."*

and

8.4.4.2 *"It is the view of the Expert Panel that as a result the design of balconies should not assist fire spread along the external wall. Balconies including combustible materials may not meet an appropriate standard of safety and could pose a risk to the health and safety of residents and other building users."*

and

8.4.4.3 *"The view of the Expert Panel is that the removal and replacement of any combustible material used in balcony construction is the clearest way to prevent external fire spread from balconies and therefore to meet the intention of building regulation requirements and this should occur as soon as practical."*

8.4.5 **Recommendation:**

8.4.5.1 Due to the absence of any identified combustible materials in the roof terrace, there are no remedial requirements regarding the construction in this location.

8.4.6 **Fire Engineer Review:**

8.4.6.1 We concur with the above findings that no remedial actions are required.

8.5 Inspection Summary: - AREA 5

8.5.1 Photographic Evidence for – AREA 5

5A

5B

5C

5D

5E

8.5.2 **Findings:**

8.5.2.1 Area 5 was a non-intrusive visual inspection carried out to the curtain walling on the 3rd floor roof terrace on the South facing elevation ***(see photo 5A).***

8.5.2.2 The curtain walling was constructed PPC aluminium frame, consisting of fixed glazed panels and awning windows and double doors allowing access to the roof terrace There was also a tinted glass spandrel panel within the configuration (***see photos 5C and 5E***).

8.5.3 **Regulations:**

8.5.3.1 The mandatory clause of Building Regulations ADB 2000, B4. (1) states: *"The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building."*

8.5.3.2 There are no provisions regarding balconies which do not constitute part of a fire escape.

8.5.3.3 In our opinion due to the performance of the materials used in the construction, the terrace would not assist in the spread of flame over the external wall and subsequently, would satisfy the requirements of B4(1).

8.5.4 **MHCLG Advice Notes**

8.5.4.1 Government Advice, issued within the Consolidated Advice Note, January 2020 (**Appendix C**) state - *"Existing residential buildings which have external walls that contain combustible materials may not meet an appropriate standard of safety and could pose a significant risk to the health and safety of residents, other building users, people in the proximity of the building or firefighters. External walls of residential buildings should not assist the spread of fire, irrespective of height."*

8.5.4.2 *"It is important therefore to understand both the materials used in the external wall construction and whether the entire system has been designed, installed,* ***and maintained appropriately****. This is applicable to building owners of buildings irrespective of height."*

8.5.4.3 *"External wall systems on existing buildings may incorporate insulation products, filler material, etc. which do not meet Class A2-s3,d2 or better (previously referred to as limited combustibility) but which has been subjected to a successful BR135 classification following a BS 8414 test. External wall systems rely upon correct design detailing and construction of cavity barriers, fire stopping and, in some cases, external renders to inhibit fire spread. Building owners should seek professional advice on whether the external wall has been installed correctly, and as per the BS 8414 test,* ***and maintained as recommended by the manufacturer/supplier."***

8.5.5 **Recommendation:**

8.5.5.1 Due to the absence of any identified combustible materials in the external wall construction, there are no remedial requirements regarding the construction in this location

8.5.6 **Fire Engineer Review:**

8.5.6.1 We concur with the above findings that no remedial actions are required.

8.6 Inspection Summary: - AREA 6

LOCATION OF INSPECTION	
Floor Level	1
Height of Inspection	Approximately 4.00m
Elevation Facing	South
STRUCTURE	
Element/System	Masonry
Type	Concrete Quoin Detail
Thickness	100mm
Combustibility Rating	Euroclass A1
INNER STRUCTURE	
Material	Plasterboard
Type	Unidentified
Combustibility Rating	Euroclass A1
INSULATION	
Type	40mm PIR Rigid Foam
Manufacturer (Product)	Celotex
Combustibility Rating	Euroclass E
CAVITY CLOSER	
How is the Cavity Closed at the Opening?	None
ADDITIONAL SURFACE FINISH	
Is there an additional surface finish?	No
Manufacturer (Product)	N/A
REMEDIATION	
Are remedial works recommended?	Subject to Fire Engineer's Assessment

8.6.1 Photographic Evidence for - AREA 6

6A

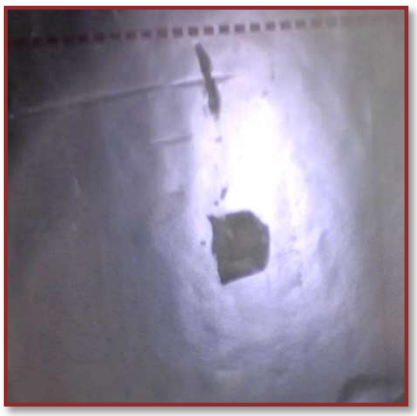
6B

6C

6D

6E

6F



6G

6H

6I

6J

8.6.2 **Findings:**

8.6.2.1 Area 6 was a drill test inspection carried out from the 1st floor of the south facing elevation (***see photos 6A and 6B***).

8.6.2.2 The construction was found to be 100mm masonry Quoin detail (***see photos 6D and 6E***) which was in front of a 160mm empty cavity to 40mm PIR rigid foam insulation ***(see photo 6G and 6J)*** ahead of another 100mm empty cavity to the internal plasterboard wall (***see photo 6I***).

8.6.2.3 Following the inspection, the mortar joint was sealed with waterproof mastic following the completion of works.

8.6.3 **Regulations:**

8.6.3.1 The mandatory clause of Building Regulations ADB 2000, B4. (1) states: *"The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building."*

8.6.3.2 The provisions within the ADB applicable to these areas remain as outlined previously within this report, see sections 8.1.3.2 – 8.1.3.7.

8.6.3.3 The Evidence we have seen such as the combustible insulation suggests that there have been material non-compliances with the advisory provisions of the ADB, such that we do not think the building facade construction will suitably pass a BS8414 test and therefore, we suggest would also not comply with the mandatory clause within the Building Regulations, namely B4(1).

8.6.4 **MHCLG Advice Notes:**

8.6.4.1 According to diagram 1 of the MHCLG document Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings ***(see Appendix D)***, the advised course of action is as follows:

8.6.4.2 If the external wall insulation is not of European Class A2-s3,d2 or better;

and

8.6.4.3 If the external wall system is not in line with one that has achieved a BR135 classification via a BS8414 test

Then

8.6.4.4 Seek urgent professional advice on the measure(s) that need to be taken to ensure that the external walls meet an appropriate standard of fire safety. This may involve the replacement of some or all of the materials in the external wall. As part of the development of these measures, assess whether cavity barriers and fire stopping have been installed correctly, and whether the system has been maintained appropriately. Consider whether short-term interim safety measures are required. Carry out any remedial works required and update your fire risk assessment following the works.

8.6.5 **Recommendation:**

8.6.5.1 Due to the combustibility of the materials installed, as per the MHCLG Guidance and in conjunction with the detailed requirements outlined in **Area 1**, a holistic fire safety review undertaken by a qualified fire engineer should consider this construction for comment on potential interim measures and definitive remediation measures required.

8.6.5.2 Should the risk not be acceptable, it is recommended that the insulation is removed and replaced with a system that is of limited combustibility, or that additional fire resisting boarding is installed internally to further encase the combustible material.

8.6.6 **Fire Engineer Review:**

8.6.6.1 Having reviewed the materials present, we are satisfied that no remedial works are required. The external façade material is brickwork. Whilst a combustible insulation is present behind this. The risk of fire spread is seen to be low when taking into account the non-combustible construction of the external and internal walls, we are satisfied that a reasonable level of safety is provided. As such, no remedial action is required.

8.7 Inspection Summary: - AREA 7

LOCATION OF INSPECTION	
Floor Level	1
Height of Inspection	Approximately 3.00m
Elevation Facing	South
STRUCTURE	
Element/System	Masonry
Type	Traditional
Thickness	75mm
Combustibility Rating	Euroclass A1
INNER STRUCTURE	
Material	Plasterboard
Type	Unidentified
Combustibility Rating	Euroclass A1
INSULATION	
Type	30mm PIR Rigid Foam
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass E
CAVITY CLOSER	
How is the Cavity Closed at the Opening?	None
ADDITIONAL SURFACE FINISH	
Is there an additional surface finish?	Yes
Manufacturer (Product)	Render
REMEDIATION	
Are remedial works recommended?	Yes

8.7.1 Photographic Evidence for - AREA 7

7A

7B

7C

7D

7E

8.7.2 **Findings:**

8.7.2.1 Area 7 was a drill test inspection carried out from the 1st floor south facing elevation (***see photos 7A & 7B***).

8.7.2.2 The construction was found to be a 75mm masonry (***see photo 7C***) which was in front of a 70mm empty cavity to 30mm PIR rigid foam insulation ahead of another 100mm empty cavity to the internal plasterboard wall.

8.7.2.3 Following the inspection, the mortar joint was sealed with waterproof mastic following the completion of works.

8.7.3 **Regulations:**

8.7.3.1 The mandatory clause of Building Regulations ADB 2000, B4. (1) states: *"The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building."*

8.7.3.2 The provisions within the ADB applicable to these areas remain as outlined previously within this report, see sections 8.1.3.2 – 8.1.3.7.

8.7.3.3 The Evidence we have seen suggests that there have been material non-compliances with the advisory provisions of the ADB, such that we do not think the building facade construction will suitably pass a BS8414 test and therefore, we suggest would also not comply with the mandatory clause within the Building Regulations, namely B4(1).

8.7.4 **MHCLG Advice Notes:**

8.7.4.1 According to diagram 1 of the MHCLG document Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings ***(see Appendix D)***, the advised course of action is as follows:

8.7.4.2 If the external wall insulation is not of European Class A2-s3,d2 or better;

and

8.7.4.3 If the external wall system is not in line with one that has achieved a BR135 classification via a BS8414 test

Then

8.7.4.4 Seek urgent professional advice on the measure(s) that need to be taken to ensure that the external walls meet an appropriate standard of fire safety. This may involve the replacement of some or all of the materials in the external wall. As part of the development of these measures, assess whether cavity barriers and fire stopping have been installed correctly, and whether the system has been maintained

appropriately. Consider whether short-term interim safety measures are required. Carry out any remedial works required and update your fire risk assessment following the works.

8.7.5 **Recommendation:**

8.7.5.1 Due to the combustibility of the materials installed, as per the MHCLG Guidance and in conjunction with the detailed requirements outlined in **Area 1**, a holistic fire safety review undertaken by a qualified fire engineer should consider this construction for comment on potential interim measures and definitive remediation measures required.

8.7.5.2 Should the risk not be acceptable, it is recommended that the insulation is removed and replaced with a system that is of limited combustibility, or that additional fire resisting boarding is installed internally to further encase the combustible material.

8.7.6 **Fire Engineer Review:**

8.7.6.1 Having reviewed the materials present, we are satisfied that no remedial works are required. The external façade material is brickwork. Whilst a combustible insulation is present behind this. The risk of fire spread is seen to be low when taking into account the non-combustible construction of the external and internal walls, we are satisfied that a reasonable level of safety is provided. As such, no remedial action is required.

8.8 Inspection Summary: - AREA 8

8.8.1 Photographic Evidence for roof terrace – AREA 8

8A

8B

8C

8D

8E

8F

8.8.2 Findings:

8.8.2.1 Area 8 was a non-intrusive visual inspection carried out to the 8th floor terrace on the East facing elevation ***(see photo 8A)***.

8.8.2.2 The roof terrace was formed as part of the existing roof construction with a PPC Aluminium parapet wall with PPC aluminium capping to form the upstand, bolted back to the building structure ***(see photos 8C and 8D).***

8.8.2.3 The floor of the roof terrace we assume was a poured concrete slab which had been decked with 450 x 450mm concrete paving slabs ***(see photo 8B).*** The operative noted the paving slabs were on legs sitting on blue insulation ***(see photo 8F).*** The insulation was not identified and will require further investigation.

8.8.3 **Regulations:**

8.8.3.1 The mandatory clause of Building Regulations ADB 2000, B4. (1) states: *"The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building."*

8.8.3.2 There are no provisions regarding balconies which do not constitute part of a fire escape.

8.8.3.3 In our opinion due to the performance of the materials used in the construction, the terrace would not assist in the spread of flame over the external wall and subsequently, would satisfy the requirements of B4(1).

8.8.4 **MHCLG Advice Notes:**

8.8.4.1 Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings (Appendix C) state, " *External walls of buildings, of any height, should not assist the spread of fire, in accordance with the functional Requirement B4 of Schedule 1 to the Building Regulations. Balconies made with combustible materials are a potential source of rapid fire spread on the external wall of residential buildings."*

and

8.8.4.2 *"It is the view of the Expert Panel that as a result the design of balconies should not assist fire spread along the external wall. Balconies including combustible materials may not meet an appropriate standard of safety and could pose a risk to the health and safety of residents and other building users."*

and

8.8.4.3 *"The view of the Expert Panel is that the removal and replacement of any combustible material used in balcony construction is the clearest way to prevent external fire spread from balconies and therefore to meet the intention of building regulation requirements and this should occur as soon as practical."*

8.8.5 **Recommendation:**

8.8.5.1 Due to the absence of any identified combustible materials in the roof terrace, there are no remedial requirements regarding the construction in this location.

8.8.6 **Fire Engineer Review:**

8.8.6.1 We concur with the above findings that no remedial actions are required.

8.9 Inspection Summary: - AREA 9

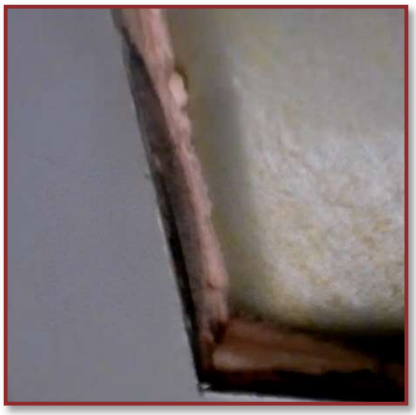
LOCATION OF INSPECTION	
Floor Level	3
Height of Inspection	Approximately 9.90m
Elevation Facing	South
SURFACE MATERIALS	
Element/System	Spandrel Panel
Type	Aluminium
Manufacturer (Product)	Unidentified
Does the panel have a core material	Yes – See Insulation (Core)
Does the panel have a tested fire rating	Euroclass A2 (Surface Material)
SUPPORT FRAMEWORK	
Material	Aluminium
Type	Vertical Retainer and Rail System
INNER LEAF	
Type	Galvanised Aluminium
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass A1
INSULATION (CORE)	
Type	PIR Rigid Foam
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass E
INSULATION (CAVITY)	
Type	Mineral Wool Insulation
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass A1
CAVITY BARRIERS	
Vertical at compartment walls	None
OTHER	
Description	None
Manufacturer	N/A
Combustibility Rating	N/A
SYNOPSIS	
Has the system been installed in accordance with ADB?	No
Are remedial works Recommended?	Yes

8.9.1 Photographic Evidence for – AREA 9

9A

9B

9C



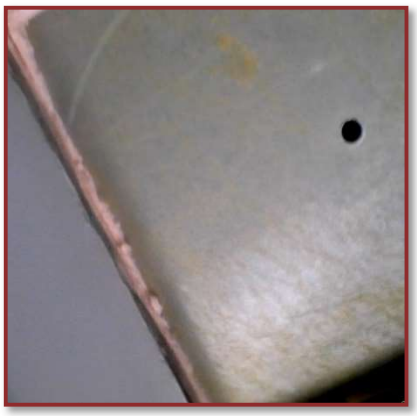
9D

9E

9F

9G

9H



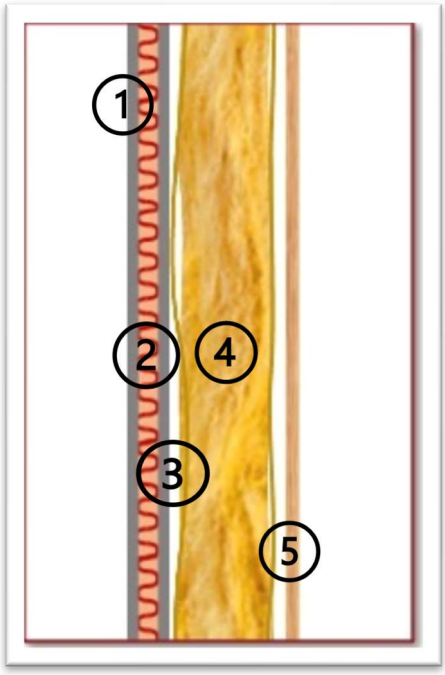
8.9.2 **Findings:**

8.9.2.1 Area 9 was an intrusive inspection carried out to the 3rd floor terrace on the South facing elevation ***(see photos 9A and 9B).***

8.9.2.2 The spandrel face was found to be a 1mm Aluminium has been applied to 100mm thick expanded rigid (PIR) insulation with a second layer of aluminium to the rear, which was mounted to the structure using an aluminium rail system ***(see photos 9C, 9D and 9F).***

8.9.2.3 Behind the spandrel system is an empty cavity with a small amount of mineral wool insulation ***(see photo 9G),*** to the internal timber plyboard sheeting . **See figure 2 below.**

8.9.2.4 Following completion of the inspection, the opening was filled with mineral wool insulation and sealed with waterproof mastic and a mechanically fixed, aluminium plate to prevent ingress.



1. *Aluminium sheet*
2. *PIR rigid foam*
3. *Aluminium panel*
4. *mineral wool*
5. *plywood sheeting*

Figure 2

8.9.3 **Regulations:**

8.9.3.1 The mandatory clause of Building Regulations ADB 2000, B4. (1) states: *"The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building."*

8.9.3.2 The provisions within the ADB applicable to these areas remain as outlined previously within this report, see sections 8.1.3.2 – 8.1.3.7.

8.9.3.3 The Evidence we have seen, due to the bonding of the thermoplastic PIR rigid foam insulation within the spandrel system suggests that the advisory provisions of the ADB have been followed. However, due to the combustibility of the materials installed, we do not think the building facade construction will suitably pass a BS8414-2 test and therefore, we suggest would also not comply with the mandatory clause within the Building Regulations, namely B4(1).

8.9.4 **MHCLG Advice Notes:**

8.9.4.1 According to diagram 1 of the MHCLG document Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings ***(see Appendix D),*** the advised course of action is as follows:

8.9.4.2 If the external wall insulation is not of European Class A2-s3,d2 or better;

and

8.9.4.3 If the external wall system is not in line with one that has achieved a BR135 classification via a BS8414 test

Then

8.9.4.4 Seek urgent professional advice on the measure(s) that need to be taken to ensure that the external walls meet an appropriate standard of fire safety. This may involve the replacement of some or all of the materials in the external wall. As part of the development of these measures, assess whether cavity barriers and fire stopping have been installed correctly, and whether the system has been maintained appropriately. Consider whether short-term interim safety measures are required. Carry out any remedial works required and update your fire risk assessment following the works.

8.9.5 **Recommendation:**

8.9.5.1 Due to the combustibility of the materials installed, as per the MHCLG Guidance and in conjunction with the detailed requirements outlined in **Area 1**, a holistic fire safety review undertaken by a qualified fire engineer should consider this construction for comment on potential interim measures and definitive remediation measures required.

8.9.5.2 Should the risk not be acceptable, it is recommended that the insulated panels are removed and replaced with a system that is of limited combustibility, namely that with achieves a combustibility rating of Euroclass A2 or better.

8.9.6 **Fire Engineer Review:**

8.9.6.1 Due to the presence of combustible PIR foam insulation behind the spandrel panels, we concur with the findings of the FRC report, and our advice is that the system should be removed and replaced with a system of materials rated to Euroclass A2 or better.

8.10 Inspection Summary: - AREA 10

LOCATION OF INSPECTION	
Floor Level	Ground
Height of Inspection	Approximately 0.5m
Elevation Facing	East
STRUCTURE	
Element/System	Brickwork
Type	Traditional
Thickness	100mm
Combustibility Rating	Euroclass A1
INNER STRUCTURE	
Material	Plasterboard
Type	Unidentified
Combustibility Rating	Euroclass A2
INSULATION	
Type	PIR Rigid Foam (Within Aluminium cladding section)
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass E
CAVITY CLOSER	
How is the Cavity Closed at the Opening?	None
ADDITIONAL SURFACE FINISH	
Is there an additional surface finish?	No
Manufacturer (Product)	N/A
REMEDIATION	
Are remedial works recommended?	Yes

8.10.1 Photographic Evidence for - AREA 10

10A

10B

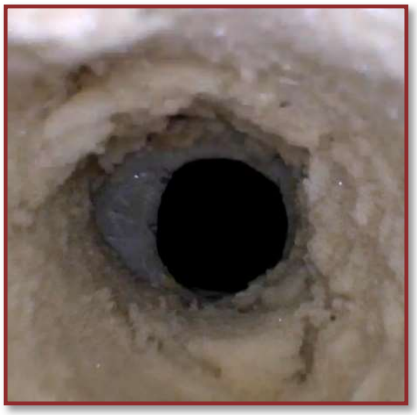
10C

10D

10E

10F

10G



10H

8.10.2 **Findings:**

8.10.2.1 Area 10 was a drill test inspection carried out from the ground floor east facing elevation to the staircase enclosure (***see photos 10A & 10B***).

8.10.2.2 The construction was found to be 100mm brickwork (***see photo 10C***) which was in front of a 230mm empty cavity ahead of the internal plasterboard (***see photo 10D***).

8.10.2.3 A secondary hole was drilled on the section above the brickwork within the aluminium the curtain walling section ***(see photo 10E).*** The construction was found to be 1mm aluminium sheeting with an internal core of PIR rigid foam insulation with a final layer of aluminium ***(see photo 10F).*** This was in front of a 315mm empty cavity to the internal plasterboard ***(see photos 10G and 10H).***

8.10.2.4 Following the inspection, the mortar joint was sealed with waterproof mastic following the completion of works.

8.10.3 **Regulations:**

8.10.3.1 The mandatory clause of Building Regulations ADB 2000, B4. (1) states: *"The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building."*

8.10.3.2 The provisions within the ADB applicable to these areas remain as outlined previously within this report, see sections 8.1.3.2 – 8.1.3.7.

8.10.3.3 The Evidence we have seen, due to the bonding of the thermoplastic PIR rigid foam insulation within the spandrel system suggests that the advisory provisions of the ADB have been followed. However, due to the combustibility of the materials installed, we do not think the building facade construction will suitably pass a BS8414-2 test and therefore, we suggest would also not comply with the mandatory clause within the Building Regulations, namely B4(1).

8.10.4 **MHCLG Advice Notes:**

8.10.4.1 According to diagram 1 of the MHCLG document Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings ***(see Appendix D)*****,** the advised course of action is as follows:

8.10.4.2 If the external wall insulation is not of European Class A2-s3,d2 or better;

and

8.10.4.3 If the external wall system is not in line with one that has achieved a BR135 classification via a BS8414 test

Then

8.10.4.4 Seek urgent professional advice on the measure(s) that need to be taken to ensure that the external walls meet an appropriate standard of fire safety. This may involve the replacement of some or all of the materials in the external wall. As part of the development of these measures, assess whether cavity barriers and fire stopping have been installed correctly, and whether the system has been maintained appropriately. Consider whether short-term interim safety measures are required. Carry out any remedial works required and update your fire risk assessment following the works.

8.10.5 **Recommendation:**

8.10.5.1 Due to the combustibility of the materials installed, as per the MHCLG Guidance and in conjunction with the detailed requirements outlined in **Area 1**, a holistic fire safety review undertaken by a qualified fire engineer should consider this construction for comment on potential interim measures and definitive remediation measures required.

8.10.5.2 Should the risk not be acceptable, it is recommended that the insulation is removed and replaced with a system that is of limited combustibility, or that additional fire resisting boarding is installed internally to further encase the combustible material.

8.10.6 **Fire Engineer Review:**

8.10.6.1 Having reviewed the materials present, we are satisfied that no remedial works are required. The external façade material is brickwork. Whilst a combustible insulation is present behind this. The risk of fire spread is seen to be low when taking into account the non-combustible construction of the external and internal walls, we are satisfied that a reasonable level of safety is provided. As such, no remedial action is required.

8.11 Inspection Summary: - AREA 11

LOCATION OF INSPECTION	
Floor Level	3
Height of Inspection	Approximately 9.0m
Elevation Facing	South
STRUCTURE	
Element/System	Roof Terrace/Balcony
Type	Cantilever
Manufacturer (Product)	Unidentified
BALUSTRADE	
Material	Brick parapet/Steel
Type	Solid Brick/Steel Railings
Combustibility Rating	Euroclass A1
SUPPORT FRAMEWORK	
Material	Steel
Type	Frame
Combustibility Rating	Euroclass A1
RAILINGS	
Type	Steel
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass A1
DECKING	
Type	Paving Slabs/Timber
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass B (if Fire Treated) Euroclass D (if Not)
SOFFIT	
Type	None
Manufacturer (Product)	N/A
Combustibility Rating	N/A
SYNOPSIS	
Has the system been installed in accordance with ADB?	Yes
Are remedial works recommended?	Yes

8.11.1 Photographic Evidence for – AREA 11

11A

11B

11C

11D

11E

11F

11G

8.11.2 **Findings:**

8.11.2.1 Area 11 was a non-intrusive visual inspection carried out to the 3rd floor terrace and steel balconies on the South facing elevation ***(see photo 11A).***

8.11.2.2 The roof terrace was formed as part of the existing roof construction with a masonry parapet wall with concrete capping to form the balustrade (***see photo 11B***).

8.11.2.3 The floor of the roof terrace we assume was a poured concrete slab which had been decked with 450 x 450mm concrete paving slabs. The operative noted the paving slabs were on legs sitting on blue insulation (***see photo 11C***). The insulation was not identified and will require further investigation.

8.11.2.4 The Balcony was constructed with a steel frame, bolted back to the building structure with a steel handrail and steel balustrade ***(see photos 11D and 11G).***

8.11.2.5 The floor of the Balcony had been decked with Timber decking with a timber mid span support (***see photos 11E and 11F***).

8.11.3 **Regulations:**

8.11.3.1 The mandatory clause of Building Regulations ADB 2000, B4. (1) states: *"The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building."*

8.11.3.2 There are no provisions regarding balconies which do not constitute part of a fire escape.

8.11.3.3 The Timber decking on the smaller individual balconies' construction would not achieve a Euroclass rating of A2 or above and as such, could assist in the spread of fire. Subsequently, it is our opinion, that the mandatory requirement of B4(1) would not be met in this instance.

8.11.4 **MHCLG Advice Notes:**

8.11.4.1 Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings (**Appendix C**) state, *" External walls of buildings, of any height, should not assist the spread of fire, in accordance with the functional Requirement B4 of Schedule 1 to the Building Regulations. Balconies made with combustible materials are a potential source of rapid fire spread on the external wall of residential buildings."*

and

8.11.4.2 *"It is the view of the Expert Panel that as a result the design of balconies should not assist fire spread along the external wall. Balconies including combustible materials may not meet an appropriate standard of safety and could pose a risk to the health and safety of residents and other building users."*

and

8.11.4.3 *"The view of the Expert Panel is that the removal and replacement of any combustible material used in balcony construction is the clearest way to prevent external fire spread from balconies and therefore to meet the intention of building regulation requirements and this should occur as soon as practical."*

8.11.5 **Recommendation:**

8.11.5.1 Due to the combustibility of the timber decking materials installed to some balconies, as per the MHCLG Guidance and in conjunction with the detailed requirements outlined in **Area 1**, a holistic fire safety review undertaken by a qualified fire engineer should consider this construction for comment on potential interim measures and definitive remediation measures required.

8.11.5.2 Should the risk not be acceptable, it is recommended that the decking is removed and replaced with a product that is of limited combustibility or better.

8.11.6 **Fire Engineer Review:**

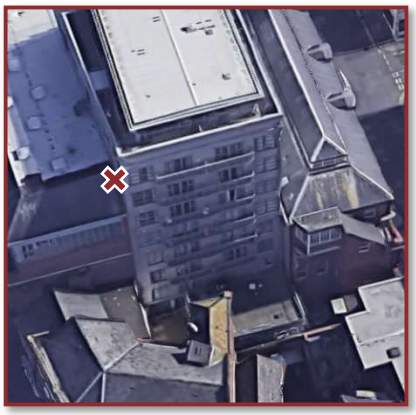
8.11.6.1 The timber decking provided to the balconies is not a material of limited combustibility, however the decking is exposed to upper floors only so there is a low risk of vertical fire spread. We are satisfied that no further action is required.

8.12 Inspection Summary: - AREA 12

LOCATION OF INSPECTION	
Floor Level	4
Height of Inspection	Approximately 12.0m
Elevation Facing	South
SURFACE MATERIALS	
Element/System	Insulated Panel
Type	Aluminium
Manufacturer (Product)	Unidentified
Does the panel have a core material	Yes – See Insulation (Core)
Does the panel have a tested fire rating	Euroclass A2 (Surface Material)
SUPPORT FRAMEWORK	
Material	Aluminium
Type	Vertical Retainer and Rail System
INNER LEAF	
Type	Galvanised Aluminium
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass A1
INSULATION (CORE)	
Type	PIR Rigid Foam
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass E
INSULATION (CAVITY)	
Type	None
Manufacturer (Product)	N/A
Combustibility Rating	N/A
CAVITY BARRIERS	
Vertical at compartment walls	None
OTHER	
Description	None
Manufacturer	N/A
Combustibility Rating	N/A
SYNOPSIS	
Has the system been installed in accordance with ADB?	No
Are remedial works Recommended?	Yes

8.12.1 Photographic Evidence for – AREA 12

12A



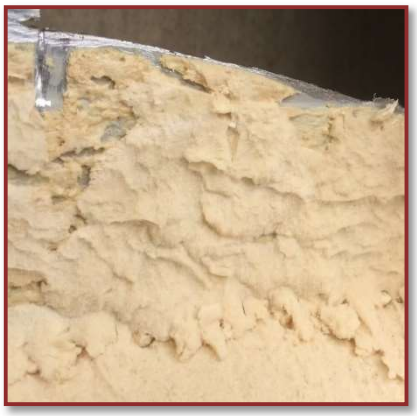
12B

12C

12D

12E

12F



12G

8.12.2 **Findings:**

8.12.2.1 Area 12 was an intrusive inspection undertaken to the external insulated panel on the third-floor floor South facing elevation (***see photos 12A and 12B***). ***Refer to figure 3 below.***

8.12.2.2 The face was found to be an aluminium sheet that has been applied to 65mm thick PIR rigid insulation, with a second aluminium plate to the rear, which was mounted to the structure using an aluminium rail system running vertically (***see photos 12C, 12D and 12G***).

8.12.2.3 Behind the insulated panel is a 100mm empty cavity with plasterboard to the rear ***(see photo 12E).***

8.12.2.4 There was no evidence of proprietary fire barriers within the cavity during the inspection, however the galvanised carrier rail took up the whole of the cavity on both sides ***(see photo 12G). Refer to figure 3 below.***

8.12.2.5 Following completion of the inspection, the opening was filled with mineral wool insulation and sealed with waterproof mastic and a mechanically fixed, aluminium plate to prevent ingress.

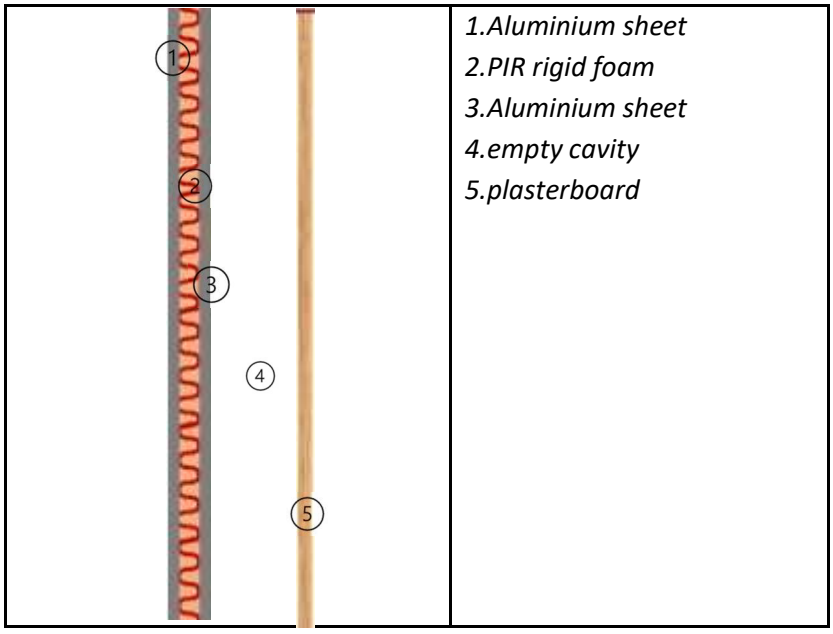


Figure 3

8.12.3 **Regulations:**

8.12.3.1 The mandatory clause of Building Regulations ADB 2000, B4. (1) states: *"The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building."*

8.12.3.2 The provisions within the ADB applicable to these areas remain as outlined previously within this report, see sections 8.1.3.2 – 8.1.3.7.

8.12.3.3 The Evidence we have seen, due to the bonding of the thermoplastic PIR rigid foam insulation within the insulated panel system suggests that the advisory provisions of the ADB have been followed. However, due to the combustibility of the materials installed, we do not think the building facade construction will suitably pass a BS8414-2 test and therefore, we suggest would also not comply with the mandatory clause within the Building Regulations, namely B4(1).

8.12.4 **MHCLG Advice Notes**

8.12.4.1 According to diagram 1 of the MHCLG document Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings ***(see Appendix D)***, the advised course of action is as follows:

8.12.4.2 If the external wall insulation is not of European Class A2-s3,d2 or better;

and

8.12.4.3 If the external wall system is not in line with one that has achieved a BR135 classification via a BS8414 test

Then

8.12.4.4 Seek urgent professional advice on the measure(s) that need to be taken to ensure that the external walls meet an appropriate standard of fire safety. This may involve the **replacement of some or all of the materials in the external wall**. As part of the development of these measures, assess whether cavity barriers and fire stopping have been installed correctly, and whether the system has been maintained appropriately. **Consider whether short-term interim safety measures are required**. Carry out any remedial works required and update your fire risk assessment following the works.

8.12.5 **Recommendation:**

8.12.5.1 Due to the combustibility of the materials installed, as per the MHCLG Guidance and in conjunction with the detailed requirements outlined in **Area 1**, a holistic fire safety review undertaken by a qualified fire engineer should consider this construction for comment on potential interim measures and definitive remediation measures required.

8.12.5.2 Should the risk not be acceptable, it is recommended that the insulated panels are removed and replaced with a system that is of limited combustibility, namely that with achieves a combustibility rating of Euroclass A2 or better.

8.12.6 **Fire Engineer Review:**

8.12.6.1 Due to the presence of combustible PIR foam insulation behind the spandrel panels, we concur with the findings of the FRC report, and our advice is that the system should be removed and replaced with a system of materials rated to Euroclass A2 or better. The spandrel panel combined with PIR insulation

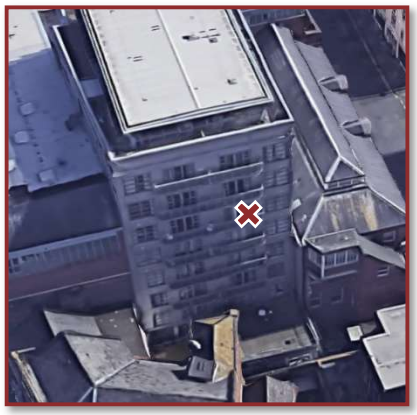
extends the full height of the property (Block B) North and South facing elevation, this could allow fire spread to all areas.

8.13 Inspection Summary: - AREA 13

LOCATION OF INSPECTION	
Floor Level	5
Height of Inspection	Approximately 15.0m
Elevation Facing	South
SURFACE MATERIALS	
Element/System	Insulated Panel
Type	Aluminium
Manufacturer (Product)	Unidentified
Does the panel have a core material	Yes – See Insulation (Core)
Does the panel have a tested fire rating	Euroclass A1
SUPPORT FRAMEWORK	
Material	Aluminium
Type	Vertical Retainer and Rail System
INNER LEAF	
Type	Galvanised Aluminium
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass A1
INSULATION (CORE)	
Type	PIR Rigid Foam
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass E
INSULATION (CAVITY)	
Type	None
Manufacturer (Product)	N/A
Combustibility Rating	N/A
CAVITY BARRIERS	
Vertical at compartment walls	Galvanized Steel
OTHER	
Description	None
Manufacturer	N/A
Combustibility Rating	N/A
SYNOPSIS	
Has the system been installed in accordance with ADB?	Yes
Are remedial works Recommended?	Yes

8.13.1 Photographic Evidence for – AREA 13

13A



13B

13C

8.13.2 **Findings:**

8.13.2.1 Area 13 was an intrusive inspection undertaken to the Insulated panel on the fourth-floor South facing elevation **(see photos 13A).**

8.13.2.2 The insulated panel is consistent with panels installed in other parts of the property, see **Area 12** of this report. The recommendations should be followed in accordance with those in other areas with the same construction.

8.13.2.3 The face was found to be an aluminium sheet that has been applied to 65mm thick PIR rigid insulation, with a second aluminium plate to the rear, which was mounted to the structure using an aluminium rail system running vertically.

8.13.2.4 Behind the insulated panel is an empty 100mm cavity with plasterboard to the rear ***Please refer to figure 3 in section 8.12.2.5 for details.***

8.13.2.5 Following completion of the inspection, the opening was filled with mineral wool insulation and sealed with waterproof mastic and a mechanically fixed, aluminium plate to prevent ingress.

8.13.3 **Regulations:**

8.13.3.1 The mandatory clause of Building Regulations ADB 2000, B4. (1) states: *"The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building."*

8.13.3.2 The provisions within the ADB applicable to these areas remain as outlined previously within this report, see sections 8.1.3.2 – 8.1.3.7.

8.13.3.3 The Evidence we have seen, due to the bonding of the thermoplastic PIR rigid foam insulation within the insulated panel system suggests that the advisory provisions of the ADB have been followed. However, due to the combustibility of the materials installed, we do not think the building facade construction will suitably pass a BS8414-2 test and therefore, we suggest would also not comply with the mandatory clause within the Building Regulations, namely B4(1).

8.13.4 **MHCLG Advice Notes:**

8.13.4.1 According to diagram 1 of the MHCLG document Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings ***(see Appendix D)***, the advised course of action is as follows:

If the external wall insulation is not of European Class A2-s3,d2 or better; and

If the external wall system is not in line with one that has achieved a BR135 classification via a BS8414 test;

8.13.4.2 Seek urgent professional advice on the measure(s) that need to be taken to ensure that the external walls meet an appropriate standard of fire safety. This may involve the **replacement of some or all of the materials in the external wall**. As part of the development of these measures, assess whether cavity barriers and fire stopping have been installed correctly, and whether the system has been maintained appropriately. **Consider whether short-term interim safety measures are required**. Carry out any remedial works required and update your fire risk assessment following the works.

8.13.5 **Recommendation:**

8.13.5.1 Due to the combustibility of the materials installed, as per the MHCLG Guidance and in conjunction with the detailed requirements outlined in **Area 1**, a holistic fire safety review undertaken by a qualified fire engineer should consider this construction for comment on potential interim measures and definitive remediation measures required.

8.13.5.2 Should the risk not be acceptable, it is recommended that the insulated panels are removed replaced with a system that is of limited combustibility, namely that with achieves a combustibility rating of Euroclass A2 or better.

8.13.6 **Fire Engineer Review:**

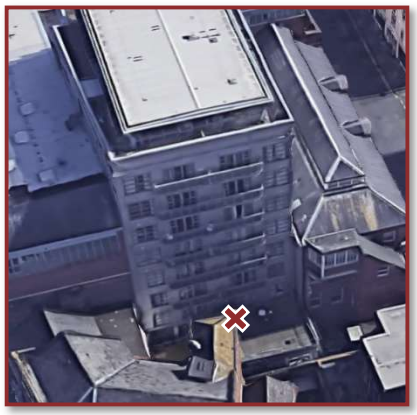
8.13.6.1 Due to the presence of combustible PIR foam insulation behind the spandrel panels, we concur with the findings of the FRC report, and our advice is that the system should be removed and replaced with a system of materials rated to Euroclass A2 or better. The spandrel panel combined with PIR insulation extends the full height of the property (Block B) North and South facing elevation, this could allow fire spread to all areas.

8.14 Inspection Summary: - AREA 14

LOCATION OF INSPECTION	
Floor Level	3
Height of Inspection	Approximately 9.0m
Elevation Facing	South
STRUCTURE	
Element/System	Balcony
Type	Cantilever
Manufacturer (Product)	Unidentified
BALUSTRADE	
Material	Steel
Type	Railings
Combustibility Rating	Euroclass A1
SUPPORT FRAMEWORK	
Material	Steel
Type	Frame
Combustibility Rating	Euroclass A1
RAILINGS	
Type	Steel
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass A1
DECKING	
Type	Timber
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass B (if Fire Treated) Euroclass D (if Not)
SOFFIT	
Type	None
Manufacturer (Product)	N/A
Combustibility Rating	N/A
SYNOPSIS	
Has the system been installed in accordance with ADB?	Yes
Are remedial works recommended?	Yes

8.14.1 Photographic Evidence for – AREA 14

14A



14B

14C

8.14.2 **Findings:**

8.14.2.1 Area 14 was a non-intrusive visual inspection carried out to the 3rd floor cantilever balcony on the South facing elevation ***(see photo 14A).***

8.14.2.2 The Balcony was constructed with a steel frame, bolted back to the building structure with a steel handrail and steel balustrade

8.14.2.3 The floor of the Balcony which had been decked with Timber decking with a timber mid span support (***see photo 14C***).

8.14.3 **Regulations:**

8.14.3.1 The mandatory clause of Building Regulations ADB 2000, B4. (1) states: *"The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building."*

8.14.3.2 There are no provisions regarding balconies which do not constitute part of a fire escape.

8.14.3.3 The Timber decking construction would not achieve a Euroclass rating of A2 or above and as such, could assist in the spread of fire. Subsequently, it is our opinion, that the mandatory requirement of B4(1) would not be met in this instance.

8.14.4 **MHCLG Advice Notes:**

8.14.4.1 Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings (**Appendix C**) state, *" External walls of buildings, of any height, should not assist the spread of fire, in accordance with the functional Requirement B4 of Schedule 1 to the Building Regulations. Balconies made with combustible materials are a potential source of rapid fire spread on the external wall of residential buildings."*

and

8.14.4.2 *"It is the view of the Expert Panel that as a result the design of balconies should not assist fire spread along the external wall. Balconies including combustible materials may not meet an appropriate standard of safety and could pose a risk to the health and safety of residents and other building users."*

and

8.14.4.3 *"The view of the Expert Panel is that the removal and replacement of any combustible material used in balcony construction is the clearest way to prevent external fire spread from balconies and therefore to meet the intention of building regulation requirements and this should occur as soon as practical."*

8.14.5 **Recommendation:**

8.14.5.1 Due to the combustibility of the timber decking materials installed to some balconies, as per the MHCLG Guidance and in conjunction with the detailed requirements outlined in **Area 1**, a holistic fire safety review undertaken by a qualified fire engineer should consider this construction for comment on potential interim measures and definitive remediation measures required.

8.14.5.2 Should the risk not be acceptable, it is recommended that the decking is removed and replaced with a product that is of limited combustibility or better.

8.14.6 **Fire Engineer Review:**

8.14.6.1 The timber decking provided to the balconies is not a material of limited combustibility, however the decking is exposed to the South facing elevation only so there is a low risk of fire spread. We are satisfied that no further action is required.

9.0 Summary

12.1 In light of the items highlighted in this report, we do not think CASTLE EXCHANGE Exchange's facade construction is likely to pass a BS8414-2 test and therefore, we suggest, it is also unlikely to comply with the mandatory clause within the Building Regulations, namely B4(1). Subsequently, we recommend remedial works in line with the following guidance from MHCLG Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings:

12.2 **Holistic Fire Safety Review:**

12.2.1 Due to the identification of combustible insulation materials used in the External Wall Construction, in accordance with the recommendations of the MHCLG and contained within the recommendation of the EWS1 form, a Holistic Fire Safety Review requires undertaking to comment on potential required interim measures.

12.3 **Cavity Barriers:**

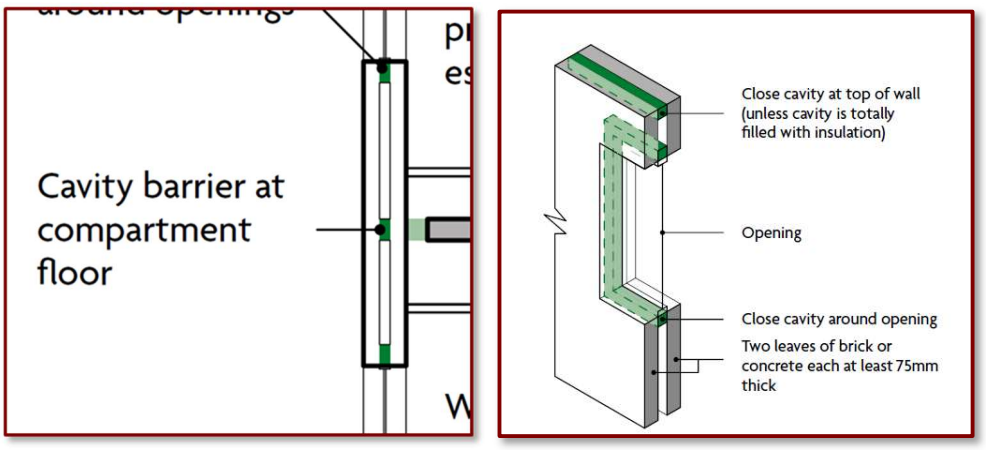
12.3.1 "11.7. Check there are no potential routes for fire spread from the interior of the building out onto, or into, the cladding system. This would include, for example, the presence and integrity of cavity barriers, and the risk of ignition to the external wall system via window surrounds and fitting details. "

12.3.2 We recommend that further to the advice from MHCLG the following items require attention:

12.3.3 Section 8 of the Approved Document B1 2019 Provision of cavity barriers proves *"To reduce the potential for fire spread, cavity barriers should be provided for both of the following.*

a. To divide cavities.
b. To close the edges of cavities."

12.3.4 With particular attention to cavity barriers around openings in external walls and at compartment floor slabs:



12.4 **Balcony Construction:**

12.4.1 There was evidence of timber balcony decking, which is combustible and therefore, recommended for removal by FRC and within the MHCLG guidance.

12.4.2 In addition, the following provisions from ADB 2019 – Volume 1 (**see Appendix B**) outline that consideration should be given, and by extension, attachments such as balconies should be constructed in line with Building Regulation B4(1):

12.4.3 *"10.4 – In relation to buildings of any height or use, consideration should be given to the choice of materials (including their extent and arrangement) used for the external wall, or attachments to the wall, to reduce the risk of fire spread over the wall."*

12.4.4 *"10.9 - Regulation 7(2) applies to any building with a storey at least 18m above ground level (as measured in accordance with Diagram D6 in Appendix D) and which contains one or more dwellings; an institution; or a room for residential purposes (excluding any room in a hostel, hotel or a boarding house)." It requires that all materials which become part of an external wall or specified attachment achieve class A2-s1, d0 or class A1, other than those exempted by regulation 7(3).*

12.5 The construction complies with certain elements of the advisory provisions of Approved Doc B 2000, as detailed in the inspection summaries, but are only compliant due to specific exclusions in the provisions. However, due to the combustibility of the materials installed, **it is our opinion that the façade will not pass BS8414-2 tests and, we suggest, would not comply with the mandatory clause within the Building Regulations, namely B4(1).**

10.0 Fire Safety Review

10.1 Our overall view is that the collective effect of the fire safety measures on the site considered holistically, as opposed to each measure in isolation, is that the external wall systems that are present do have a detrimental impact on the overall fire safety of the building. The exterior of the development does not comply with the consolidated guidance 'Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings' issued by Ministry of Housing, Communities and Local Government (MHCLG) in January 2020.

Due to the presence of combustible PIR foam insulation behind the spandrel panels, we concur with the findings of the FRC report, and our advice is that the system should be removed and replaced with a system of materials rated to Euroclass A2 or better. This insulation extends the full height of the property (Block B) North and South facing elevation and surrounds the escape staircase on block A.

The timber decking provided to the balconies is not a material of limited combustibility, however the decking is exposed to the South facing elevation only so there is a low risk of fire spread. We are satisfied that no further action is required.

Having reviewed the materials present, we are satisfied that no remedial works are required. The external façade material is brickwork. Whilst a combustible insulation is present behind this. The risk of fire spread is seen to be low when taking into account the non-combustible construction of the external and internal walls, we are satisfied that a reasonable level of safety is provided. As such, no remedial action is required.

Our RICS EWS1 form rating is B2, meaning:

B2 - I have concluded that an adequate standard of safety is not achieved, and I have identified to the client organisation the remedial and interim measures required

Option B is for buildings where combustible materials are present

We recommend that an annual fire risk assessment is undertaken for the properties, in accordance with the Regulatory Reform (Fire Safety) Order 2005, by a third party accredited fire risk assessor, registered on schemes such as the IFE Fire Risk Assessor Register.

10.2 Castle Exchange is a multi-storey end of terrace modernised building complex, consisting of a 5 and 8-storey block of residential apartments split into Blocks A, B, C and D. The maximum height of the building is estimated to be approximately 24m, with a habitable top story level calculated to be approximately 21m to the slab level of the uppermost floor. A two-level car park is located at basement level and extends

under the blocks. The exterior has a mixture of brickwork, rendered blockwork, aluminium curtain walling system and balconies.

There are five exits and five protected staircases serving the apartments. The upper levels of block D are served by a single stairway, alternative means of escape is available from level 5. The staircases within block A & D have an automatic smoke ventilation system. A domestic sprinkler system has also been designed and installed throughout Castle Exchange.

Due to the fire alarm system being installed throughout the means of escape / common areas, construction and design of the property, the evacuation strategy has been changed to simultaneous as stated in the recent Fire Risk Assessment (section 3.21).

The occupation of the properties is general needs housing, so we have reasonably assumed that the occupants are a typical cross section of the general public. It was not reported that any residents are especially vulnerable or at risk; the premises do not provide sheltered or extra care housing support.

There is seen to be a moderate risk of external ignition, as the property has a shared car park situated underneath the premises.

The premises is located near a local fire station, London Road fire station which is no more than 1 mile from the property. A second fire station is 3 miles from the property. As such, a swift response to any emergency call would be anticipated.

10.3 This report has confirmed a number of remedial actions that are to be undertaken relating to the external fabric of the property. An action plan should be developed for the remedial works, and these actions should be undertaken in a timely manner. However, our view is that the risk is such that there is no requirement for any interim measures, such as a waking watch, to be implemented due to the domestic sprinkler system in place and simultaneous evacuation procedure.

10.4 Supporting & Reviewed Documents

Supporting

- Advice for building owners of multi-storey, multi-occupied residential buildings. January 2020 by MHCLG.
- Building Regulations 2010
- Approved Document B
- Fire Safety in Purpose Built Blocks of Flats Guidance

Reviewed

- External Façade Report, by Façade Remedial Consultants

- Site visit for visual inspection
- Fire Risk Assessment

11.0 Suitability

11.1 This report has been authorised by Dorian Lawrence MCIOB CBuildE MCABE ASFE; a Member of the Chartered Institute of Builders, a Chartered Building Engineer (Member) of the Chartered Association of Building Engineers and an Associate of the Society of Façade Engineers. Therefore, Dorian is a member of a suitable professional body as noted on MHCLG Information Note 1 and the RICS list of appropriate professions to approve EWS1 forms.

11.2 As such, this report is suitable to be used to advise on compliance or non-compliance with the MHCLG guidance on cladding.

12.0 Appendices

12.1 Appendix A: Approved Document B – 2000

12.2 Appendix B: Approved Document B Volume 1 – 2019

12.3 Appendix C: Advice for Building Owners of Multi-story, Multi-occupied Residential Buildings

12.4 Appendix D: MHCLG Diagram 1 (below)