



# EXTERNAL FAÇADE REPORT

## HABITAT

## WOOLPACK LANE, NOTTINGHAM, NG1 1GJ

Date carried out: 27<sup>th</sup> May 2020

Report Number: CH/1370/27052020

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## 1.0 Terms of Reference

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### 1.1 Mission Statement:

- 1.1.1 WPG Property Services Ltd have instructed FR Consultants to undertake an intrusive inspection of the external wall system and fixtures including all associated components on the property named HABITAT 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. Additional photographs and endoscope video footage is available upon request.
- 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.



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## 2.0 Scope of Works

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- 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.



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### 3.0 The Building Act and Building Regulations

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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 from 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): -

3.10.1 Approved Document B ("ADB") to the Building Regulations: paragraphs 12.5-12.9 of that guidance.

3.10.2 A Full engineered Fire solution report



- 3.10.3 A Desktop study.
- 3.10.4 A British Standards test commissions by the Building Research Establishment (BRE): BS 8414-2 test
- 3.11 These are set out both in the ADB and in the BCA (Building Control Alliance) guidance as Technical options.

### 3.12 ADB Route:

- 3.13 The ADB guidance on how compliance can be achieved is set out in Approved Document B at Paragraphs 12.5-12.9.
- 3.14 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.*

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

- 3.16 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."*

- 3.17 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:

- 3.17.1 Buildings Less than 1000mm from the relevant boundary are to contain materials of Class B-s3, d2(2) or better

- 3.17.2 Buildings 1000mm or more from the relevant boundary are to contain materials of

- 3.17.2.1 From ground level to 18m: class C-s3, d2(3) or better



3.17.2.2 From 18m in height and above: class B-s3, d2(2) or better

3.18 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 ...”*

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

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

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

### 3.22 Desktop Reports:

3.23 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.

### 3.24 Fire Engineered Solutions:

3.25 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.

### 3.26 BS 8414 test:

3.27 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).

3.28 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.



### 3.29 Applicable Building Regulations

3.30 The approved planning application, reference 02/00600/PFUL3 was validated by Nottingham City Council on the 25<sup>th</sup> March 2002, with a decision made on 28<sup>th</sup> April 2004. The Building Regulations in existence with The Habitat is therefore the 2000 Approved Document B, with 2002 Amendments.

3.31 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."*

*"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)."*

3.32 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."*

3.33 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 over cladding or in ventilated cavities, may present such a risk in tall buildings, even though the provisions of diagram 40 may have been satisfied."*

*"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"*

3.34 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."*

*"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."*



*“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 over cladding and rainscreen construction.”*

- 3.35 The ADB also includes Diagram 31 and Diagram 32 regarding the provision of Cavity Barriers.
- 3.36 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:*
- i. steel at least 0.5mm thick; or*
  - ii. timber at least 38mm thick; or*
  - iii. polythene sleeved mineral wool, or mineral wool slab, in either case under compression when installed in the cavity; or*
  - iv. 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.”*

- 3.37 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.”*
- 3.38 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.
- 3.39 Government Advice Notes:**
- 3.40 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.
- 3.41 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.
- 3.42 The programme is working with building owners, housing providers, schools, hospitals, and the construction industry, including an Industry Response Group.



- 3.43 The Building Safety Programme have issued Advice Notes to provide advice on the use of materials in construction.
- 3.44 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:
- 3.44.1 The MHCLG Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings released 20<sup>th</sup> 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
- 3.44.2 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'.
- 3.44.3 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."*
- "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.**"*
- 3.45 From 21<sup>st</sup> 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.

3.46

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),

3.47 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 <b>BS 476-11</b> , 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 <sup>3</sup> or more, which, when tested to <b>BS 476-11</b> , 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 <sup>3</sup> , which, when tested to <b>BS 476-11</b> , 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 <b>BS 476-7</b> . b. Has a fire propagation index (I) of a maximum of 12 and sub-index (II) of a maximum of 6, determined by using the method given in <b>BS 476-6</b> . Index of performance (I) relates to the overall test performance, whereas sub-index (II) is derived from the first three minutes of the test
C-s3, d2	Class 1 in accordance with <b>BS 476-7</b>
D-s3, d2	Class 3 in accordance with <b>BS 476-7</b>



## 4.0 Site Plan



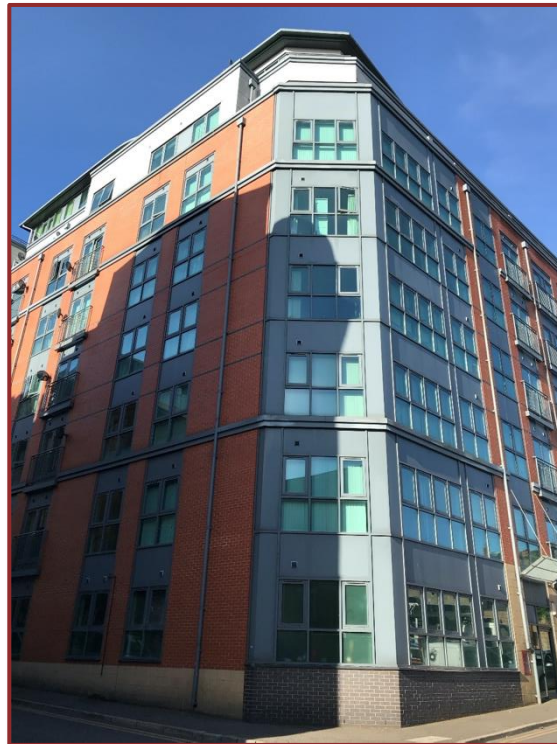
The above image demonstrates the area covered by the property.



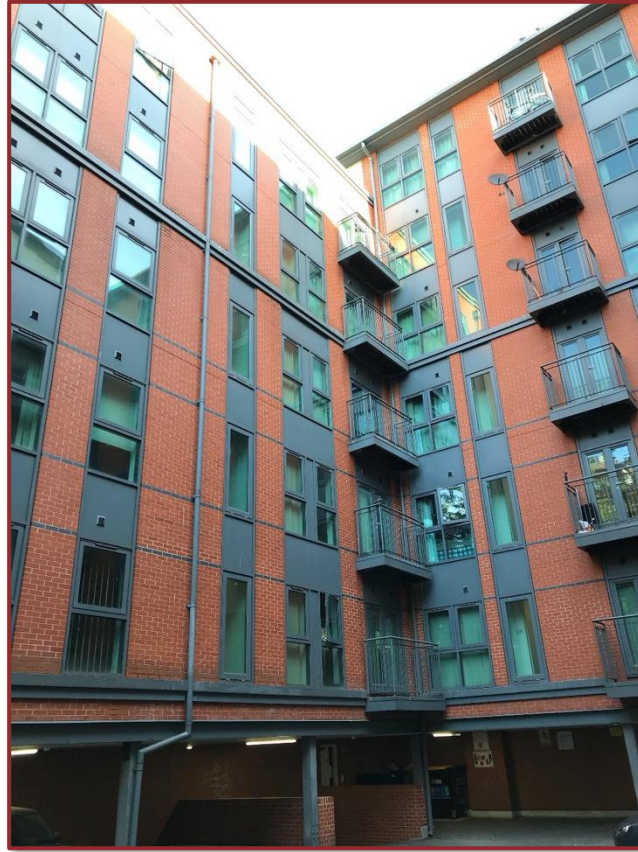
## 5.0 Elevations



Part North facing elevations to The Habitat consisting of metallic cladding panels, masonry, and balconies.



Part North and Part West facing elevations to The Habitat consisting of metallic cladding panels, masonry, and balconies.



Part South and Part East facing elevations to The Habitat consisting of metallic cladding panels, masonry, undercroft parking areas and balconies.



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## 6.0 Introduction

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- 6.1 The inspection was carried out on 27th May 2020 . The location of the survey was HABITAT , Woolpack Lane, Nottingham, NG1 1GJ. Located on the site is an 8-storey block of residential apartments. There was internal car parking on the ground floor and residential apartments on all other floors. The maximum height of the building is estimated to be approximately 30.40m, with a habitable top story level calculated to be approximately 23.40m 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**) and is a building with a height of 18m according to MHCLG Guidance (**Appendix C**).
- 6.2 A total of 8 areas were inspected on the day from areas identified as of interest from satellite imagery and as outlined in our initial proposal FRC1370. A selection of detailed drawings was not available for inspection.



## 7.0 Observations

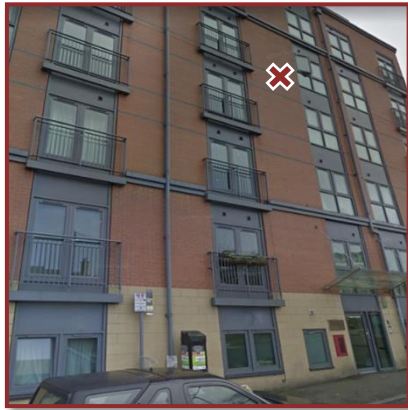
### 7.1 Inspection Summary: - AREA 1

<b>LOCATION OF INSPECTION</b>	
Floor Level	4
Height of Inspection	Approximately 11.54m
Elevation Facing	North
<b>STRUCTURE</b>	
Element/System	Brickwork
Type	Engineering
Thickness	100mm
Combustibility Rating	Euroclass A1
<b>INNER STRUCTURE</b>	
Material	Steel
Type	Frame
Combustibility Rating	Euroclass A1
<b>INSULATION</b>	
Type	50mm Phenolic Rigid Foam
Manufacturer (Product)	Foil backed
Combustibility Rating	Euroclass C
<b>CAVITY CLOSER</b>	
How is the Cavity Closed at the Opening?	Not visible
<b>ADDITIONAL SURFACE FINISH</b>	
Is there an additional surface finish?	No
Manufacturer (Product)	N/A
<b>REMEDICATION</b>	
Are remedial works recommended?	Yes

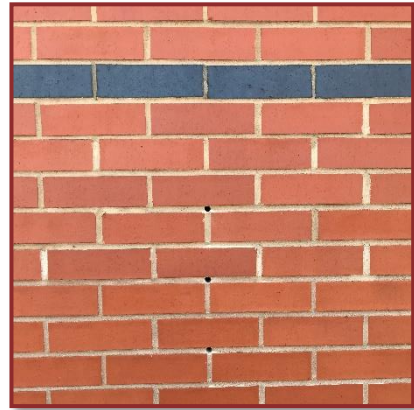


7.1.1 Photographic Evidence for - AREA 1

1A



1B



1C



1D



1E



1F



1G



1H



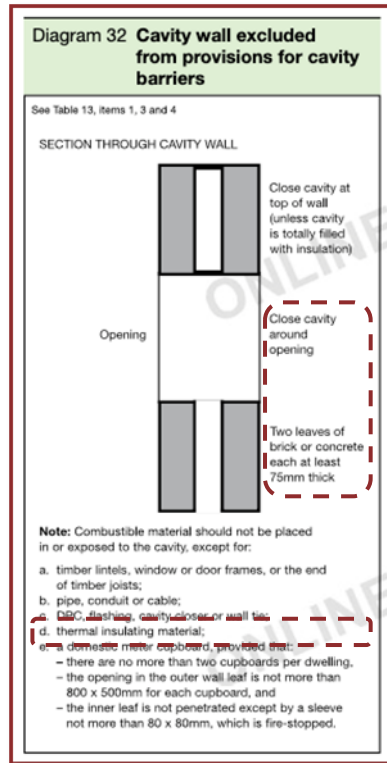


## 7.1.2 Findings

- 7.1.2.1 Area 1 was a series of drill test inspections carried out from around the 4<sup>th</sup> floor floor slab area of the north elevation facing Woolpack Street (*see photos 1A and 1B*).
- 7.1.2.2 The first of the three drill tests, at the highest point was found to be 100mm engineering brickwork which at approximately 45mm resisted and was found to come up against steel re-bar (*see photo 1C*).
- 7.1.2.3 A second hole was drilled, in the approximate location of the floor slab, which was again found to be 100mm brickwork which was in front of a 80mm empty cavity onto 45mm foil backed phenolic rigid foam insulation ahead of the steel frame (*see photos 1D, 1E and 1F*).
- 7.1.2.4 A third hole was drilled which again was made up of 100mm brickwork, 80mm empty cavity, this time with a small steel foil backed phenolic rigid foam insulation (*see photos 1G and 1H*).
- 7.1.2.5 Following the inspection, the mortar joint was sealed with waterproof mastic following the completion of works.

## 7.1.3 Regulations:

- 7.1.3.1 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."*
- 7.1.3.2 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 over cladding or in ventilated cavities, may present such a risk in tall buildings, even though the provisions of diagram 40 may have been satisfied.***
- "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"*.
- 7.1.3.3 The use of thermal insulation within a masonry cavity can be excluded in accordance with Diagram 32 (overleaf) –



7.1.3.4 As the cavity appears to not contain 75mm+ masonry to both leaves (as per Diagram 32), the exemption regarding the use of combustible insulation has not been satisfied.

7.1.3.5 Due to the absence of an internal masonry leaf, the evidence we have seen suggests that there have been material non-compliances with the advisory provisions of the ADB regarding the use of combustible thermal insulation, such that we do not think the building facade construction would comply with the mandatory clause within the Building Regulations, namely B4(1).

**7.1.4 MHCLG Advice Notes**

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

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

but,

7.1.4.3 If the external wall system is in line with one that has achieved a BR135 classification via a BS8414 test

then,

7.1.4.4 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.***

#### **7.1.5 Recommendation:**

- 7.1.5.1 Due to the construction of the external wall in this area, prior to undertaking any wholesale remedial works, a further test to the external wall undertaken from internally would confirm the absence of a secondary masonry leaf prior to wholesale remediation works to the masonry areas. Following confirmation of our findings, the below recommendations will apply -
- 7.1.5.2 The two options which can be recommended regarding the potential remediation works in this location –
- a) The cavity of the internal wall should be encased with further 75mm+ masonry in this location to adhere to the requirements of provision within Diagram 32, or a fireproof structure/ construction.
  - b) The combustible phenolic insulation should be removed from the cavity and replaced with an insulation material which achieves limited combustibility or better in accordance with the provisions of the ADB.
- 7.1.5.3 Due to the presence of combustible material, in accordance with the guidance from the MHCLG and requirements of the EWS1 form, a Fire Safety Review conducted by a fire engineer is required to comment on potential interim measures as a result of the combustible materials.



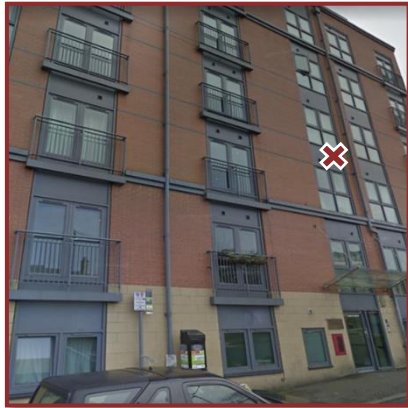
## 7.2 Inspection Summary: - AREA 2

<b>LOCATION OF INSPECTION</b>	
Floor Level	3
Height of Inspection	Approximately 9.00m
Elevation Facing	North
<b>SURFACE MATERIALS</b>	
Element/System	Spandrel Panel
Type	PPC Aluminium with PIR Foam to rear
Manufacturer (Product)	Unidentified
Does the panel have a core material	Yes
Does the panel have a tested fire rating	Euroclass A2 (Surface Finish only)
<b>SUPPORT FRAMEWORK</b>	
Material	Aluminium
Type	Window Profile
<b>SUBSTRATE/BACKBOARD</b>	
Type	Steel
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass A1
<b>INSULATION</b>	
Type	PIR Rigid Foam Insulation
Manufacturer (Product)	Kingspan
Combustibility Rating	Euroclass C
<b>CAVITY BARRIERS</b>	
Vertical at compartment walls	Not Required at this Location
Horizontal at floor slabs	None
Around openings in external walls	None to penetration
<b>OTHER</b>	
Description	None
Manufacturer	N/A
Combustibility Rating	N/A
<b>SYNOPSIS</b>	
Does the entire system have or is it likely to achieve a BS 8414-2?	No
Has the system been installed in accordance with ADB?	No
Are remedial works Recommended?	Yes



7.2.1 Photographic Evidence for - AREA 2

2A



2B



2C



2D



2E



2F



2G





## 7.2.2 Findings

7.2.2.1 Area 2 was an intrusive inspection undertaken to the Spandrel Panel on the third-floor floor slab of the North facing elevation facing Woolpack Street (*see photos 2A and 2B*).

7.2.2.2 The inspection was made by removing the extract baffle and flue from the panel, which was made up of a 2mm PPC Aluminium face with a 22mm phenolic foam core followed by a 2mm Aluminium inner face. Glued to the back of this panel was a further 50mm of PIR Rigid Foam Kingspan Insulation (*see photos 2C and 2D*).

7.2.2.3 Behind the insulation was a large void of 170mm back to the floor slab steel.

7.2.2.4 On further inspection of the void, the window frame could be identified (*see photo 2E*). There was however, no fire collar fitted to the flu penetration through the insulation core.

7.2.2.5 Following completion of the inspection, the flue was re-fixed, and the extract fan baffle sealed with waterproof mastic and reattached in position to prevent water ingress (*see photos 2F and 2G*).

## 7.2.3 Regulations:

7.2.3.1 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."*

7.2.3.2 The provision regarding the use of combustible insulation is outlined in section 7.1.3.2 of this report.

7.2.3.3 According to paragraph 18 of Appendix A of the 2000 ADB – *"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."*

7.2.3.4 The rear of the PIR insulation is exposed within the cavity.

7.2.3.5 The Evidence we have seen, due to the exposed PIR foam within the spandrel 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 would comply with the mandatory clause within the Building Regulations, namely B4(1).

7.2.3.6 As the manufacturer of the panel is unknown, we are unable to confirm the system has achieved a BR135 classification via a BS8414-2 test through the BRE - <https://www.bre.co.uk/regulatory-testing>.

## 7.2.4 MHCLG Advice Notes

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



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

and

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

then

7.2.4.4 *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.*

#### 7.2.5 Recommendation:

7.2.5.1 Due to the presence of combustible insulation, in accordance with the MHCLG Guidance, a holistic fire safety review, undertaken by a qualified Fire Engineer, is also required to confirm the interim measures which may be needed. These reports also consider the risk associated with the cladding regarding potential remediation measures following identification of the materials outlined.

7.2.5.2 Due to the combustibility of these materials, replacement of these spandrel panels would be recommended and may be required.



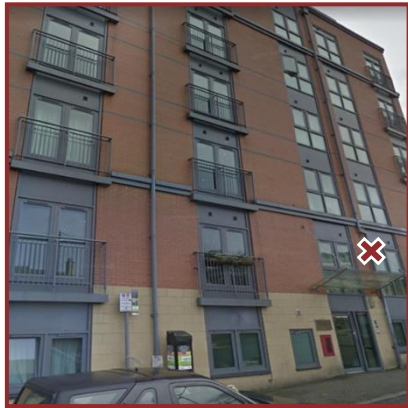
## 7.3 Inspection Summary: - AREA 3

<b>LOCATION OF INSPECTION</b>	
Floor Level	1
Height of Inspection	Approximately 6.00m
Elevation Facing	North
<b>STRUCTURE</b>	
Element/System	Brickwork
Type	Engineering
Thickness	100mm
Combustibility Rating	Euroclass A1
<b>INNER STRUCTURE</b>	
Material	Plasterboard
Type	Internal
Combustibility Rating	Euroclass A2
<b>INSULATION</b>	
Type	25mm Phenolic Rigid Foam / 95mm Mineral Wool
Manufacturer (Product)	Kingspan / Unidentified
Combustibility Rating	Euroclass C / Euroclass A1
<b>CAVITY CLOSER</b>	
How is the Cavity Closed at the Opening?	Fire Sock
<b>ADDITIONAL SURFACE FINISH</b>	
Is there an additional surface finish?	No
Manufacturer (Product)	N/A
<b>REMEDIATION</b>	
Are remedial works recommended?	Yes



7.3.1 Photographic Evidence for - AREA 3

3A



3B



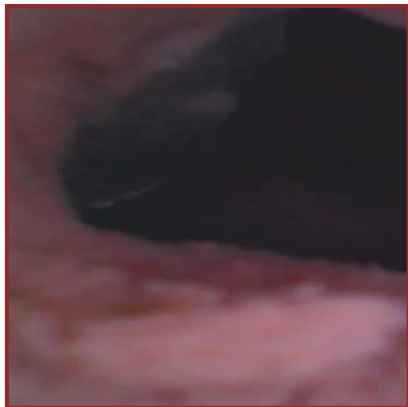
3C



3D



3E



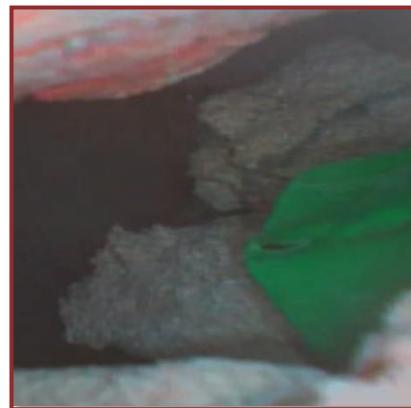
3F



3G



3H





### 7.3.2 Findings

- 7.3.2.1 Area 3 was a drill test inspection carried out from the 1<sup>st</sup> floor of the North Elevation to the right-hand side of the main entrance facing Woolpack Street (*see photos 3A and 3B*).
- 7.3.2.2 The construction was found to be 100mm engineering brickwork supported by an Ancon brick carrying system which was in front of a 80mm empty cavity to a combination of 25mm Kingspan phenolic rigid foam insulation and 95mm mineral wool insulation ahead of the internal plasterboard wall (*see photos 3C, 3D, 3E, 3F and 3G*).
- 7.3.2.3 A secondary hole was drilled on the angle towards the curtain walling section to confirm how the cavity was closed to the opening. A green fire sock could be vaguely identified from the endoscope footage within the edge of the cavity but was not up against the frame (*see photo 3H*).
- 7.3.2.4 Following the inspection, the mortar joint was sealed with waterproof mastic following the completion of works.

### 7.3.3 Regulations:

- 7.3.3.1 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."*
- 7.3.3.2 The regulatory provision requirements are consistent with those outlined for the Masonry section as outlined in sections 7.1.3.2 – 7.1.3.4 of this report.
- 7.3.3.3 As the cavity appears to not contain 75mm+ masonry to both leaves (as per Diagram 32), the exemption regarding the use of combustible insulation has not been satisfied.
- 7.3.3.4 Due to the absence of an internal masonry leaf, the evidence we have seen suggests that there have been material non-compliances with the advisory provisions of the ADB regarding the use of combustible thermal insulation, such that we do not think the building facade construction would comply with the mandatory clause within the Building Regulations, namely B4(1).

### 7.3.4 MHCLG Advice Notes

- 7.3.4.1 According to Diagram 1 of the MHCLG document Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings (*see Appendix E*), the advised course of action is as follows:
- 7.3.4.2 If the external wall insulation is not of European Class A2-s3, d2 or better;
- but,
- 7.3.4.3 If the external wall system is in line with one that has achieved a BR135 classification via a BS8414 test



then,

7.3.4.4 *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.*****

### 7.3.5 Recommendation:

7.3.5.1 Our recommendation within this area are consistent with Area 1, with an internal inspection recommended prior to wholesale remedial works.

7.3.5.2 This area should be considered as part of a holistic fire safety review, required under MHCLG guidance due to the presence of combustible insulation.



## 7.4 Inspection Summary: - AREA 4

<b>LOCATION OF INSPECTION</b>	
Floor Level	7
Height of Inspection	Approximately 23.0m
Elevation Facing	South
<b>STRUCTURE</b>	
Element/System	Balcony/Terrace
Type	Roof Terrace
Manufacturer (Product)	Unidentified
<b>BALUSTRADE</b>	
Material	Steel
Type	Railings
Combustibility Rating	Euroclass A1
<b>SUPPORT FRAMEWORK</b>	
Material	Steel
Type	Frame
Combustibility Rating	Euroclass A1
<b>RAILINGS</b>	
Type	Steel
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass A1
<b>DECKING</b>	
Type	Paving Slabs
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass A1
<b>SOFFIT</b>	
Type	Unknown
Manufacturer (Product)	Unknown
Combustibility Rating	Unknown
<b>SYNOPSIS</b>	
Does the entire system have or is it likely to achieve a BS 8414-2?	N/A
Has the system been installed in accordance with ADB?	Yes
Are remedial works recommended?	No



#### 7.4.1 Photographic Evidence for – AREA 4

4A



4B



4C



4D



#### 7.4.2 Findings

7.4.2.1 Area 4 was a non-intrusive visual inspection carried out to the 7<sup>th</sup> floor roof terrace on the south facing elevation (*see photo 4A*).

7.4.2.2 The current pandemic restricted access onto the terrace areas and therefore our inspection was limited from that of the Mobile Elevated Works Platform as deployed in other areas.

7.4.2.3 The Balcony was constructed off the buildings steel frame, bolted back to the building structure with a steel handrail and steel balustrade (*see photo 4B*).

7.4.2.4 The floor of the terrace was the main roof structure of the building which had been decked with concrete paving slabs (*see photo 4C*).

7.4.2.5 The penthouse apartment was fronted with curtain glazing and rainscreen cladding (*see photo 4D*).



### 7.4.3 Regulations:

7.4.3.1 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."*

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

7.4.3.3 Due to the use of non-combustible materials in the roof terrace construction, we consider that the mandatory clause of the Building Regulations, namely B4(1), has been satisfied.

### 7.4.4 MHCLG Advice Notes

7.4.4.1 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

7.4.4.2 *"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

7.4.4.3 *"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."*

### 7.4.5 Recommendation:

7.4.5.1 It is our opinion that no further recommendations can be made to this area.

7.4.5.2 Human factor plays a large part in the cause of fire. Residents should be reminded of their responsibilities regarding reducing the risk of fire spread.



## 7.5 Inspection Summary: - AREA 5

<b>LOCATION OF INSPECTION</b>	
Floor Level	7
Height of Inspection	Approximately 21.5m
Elevation Facing	North
<b>SURFACE MATERIALS</b>	
Element/System	Rainscreen Cladding
Type	Mild Steel
Manufacturer (Product)	Unknown
Does the panel have a core material	Yes
Does the panel have a tested fire rating	Unknown
<b>SUPPORT FRAMEWORK</b>	
Material	Steel
Type	Frame
<b>SUBSTRATE/BACKBOARD</b>	
Type	Plasterboard
Manufacturer (Product)	Unknown
Combustibility Rating	Euroclass A2
<b>INSULATION</b>	
Type	Panel Core – PIR Rigid Foam
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass C
<b>CAVITY BARRIERS</b>	
Vertical at compartment walls	Not Required at this Location
Horizontal at floor slabs	None
Around openings in external walls	Not required at this Location
<b>OTHER</b>	
Description	None
Manufacturer	N/A
Combustibility Rating	N/A
<b>SYNOPSIS</b>	
Does the entire system have or is it likely to achieve a BS 8414-2?	No
Has the system been installed in accordance with ADB?	No
Are remedial works Recommended?	Yes

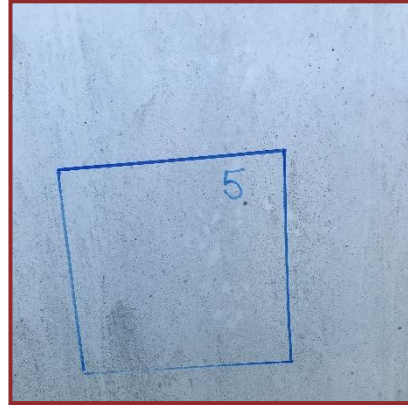


7.5.1 Photographic Evidence for - AREA 5

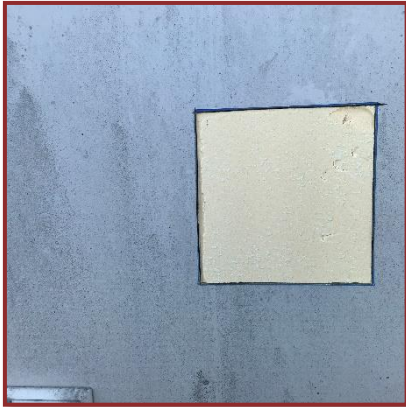
5A



5B



5C



5D



5E



5F



5G



5H





5I



5J



5K



## 7.5.2 Findings

7.5.2.1 Area 5 was an intrusive inspection undertaken to the external rainscreen cladding on the seventh floor of the North facing elevation onto Woolpack Street. This had been relocated from its original location (*see photos 5A and 5B*).

7.5.2.2 The cladding face was found to be a mild steel sandwich panel consisting of 1.5mm mild steel outer face, a 40mm rigid foam insulation inner core and a further layer of 1mm mild steel making up the internal face (*see photos 5C, 5D and 5E*).

7.5.2.3 Behind the panel was a large cavity between the face of the panel and the building's steel frame, measuring approximately 450mm (*see photos 5F& 5H*).

7.5.2.4 Within the cavity, you can see the plasterboard internal skin to the apartment below with no apparent cavity barrier visible (*see photo 5G*).

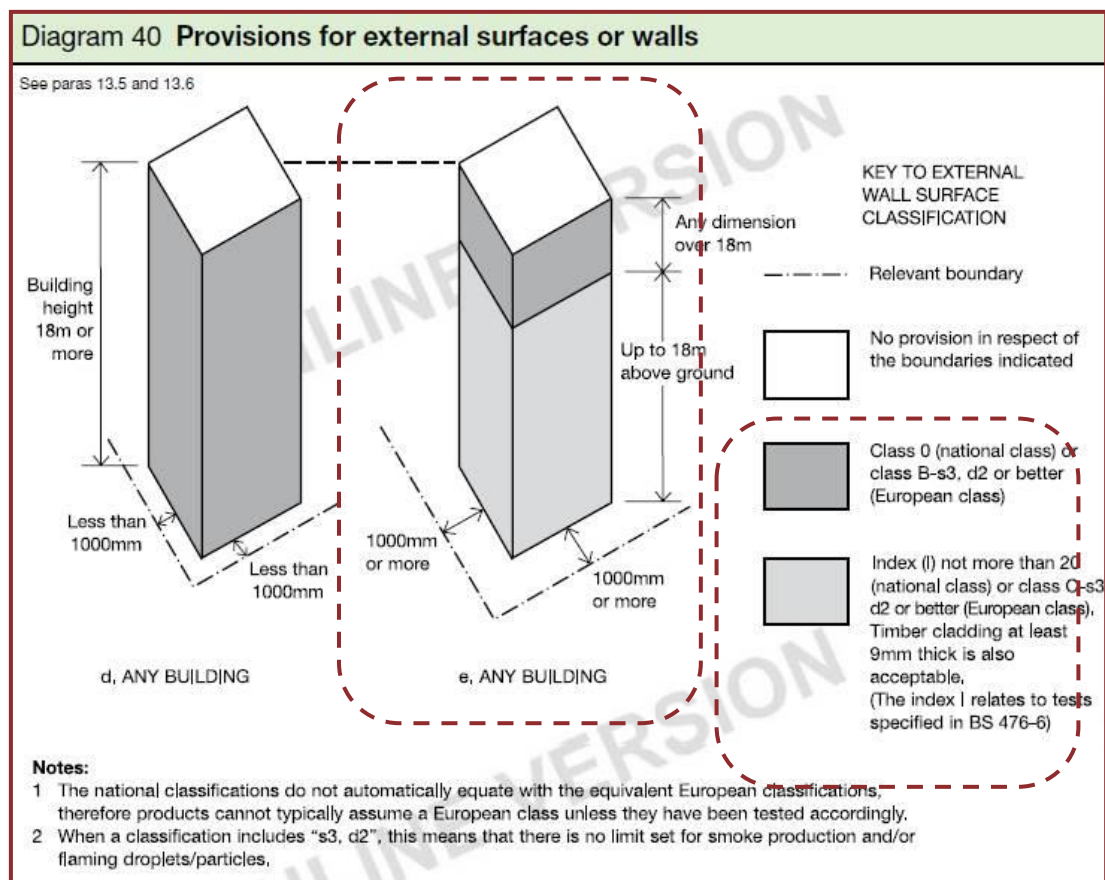
7.5.2.5 Following completion of the inspection, the opening was filled with mineral wool insulation and sealed with waterproof mastic and a mechanically fixed, aluminium plate to prevent ingress (*see photos 5I, 5J and 5K*).



### 7.5.3 Regulations:

7.5.3.1 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.”*

7.5.3.2 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.”* Diagram 40 is shown below.



7.5.3.3 The provisions regarding thermoplastic insulation is outlined in sections 7.1.3.2 and 7.2.3.3 of this report.

7.5.3.4 The Table 13 of the Approved Document B 2002 provides that cavity barriers should be provided:

*“At the junction between an external cavity wall and a compartment wall that separates buildings, and at the top of such an external cavity wall.”*

And

*“At the junction between an external cavity wall and every compartment floor and compartment wall.”*



And

*“At the junction between a cavity wall and every compartment floor, compartment wall, or other wall or door assembly which forms a fire-resisting barrier”*

And

*“In a protected escape route, above and below any fire-resisting construction which is not carried full storey height, or (in the case of a top storey) to the underside of the roof covering.”*

And

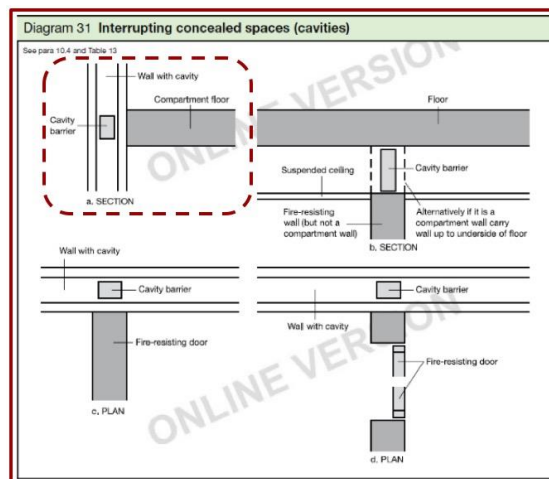
*“Within the void behind the external face of rainscreen cladding at every floor level, and on the line of compartment walls abutting the external wall, of buildings which have a floor 18m or more above ground level”*

And

*“At the edges of cavities (including around openings).”*

7.5.3.5 Paragraph 10.8 of the Approved Documents B 2002 also provides *“Cavity barriers should be tightly fitted to rigid construction and mechanically fixed in position wherever possible. Where this is not possible (for example, in the case of a junction with slates, tiles, corrugated sheeting or similar materials) the junction should be fire-stopped. Provisions for fire-stopping are set out in Section 11.”*

7.5.3.6 Diagram 31 overleaf provides an illustration of the way interrupting concealed spaces should be adopted:



7.5.3.7 Due to the presence of combustible insulation in this location, it is considered that there have been material non-compliances with the Approved Document, unless the system can demonstrate the successful completion of a BS8414-2 test, which, at the time of writing, we have not been made aware of. As such, it is



considered that this area of construction is non-compliant with the mandatory section of the Building Regulations, namely, B4(1).

#### 7.5.3.8 MHCLG Advice Notes

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

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

and

7.5.3.11 If the external wall cladding panels are of European Class A2-s2, d2 or better

then

7.5.3.12 *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.*

#### 7.5.4 Recommendation:

7.5.4.1 The presence of combustible insulation requires completion of a Holistic Fire Safety review, undertaken by a qualified Fire Engineer, with a view to confirming potential interim measures. The consideration of the risk offered by these materials will be considered in line with potential recommendations.

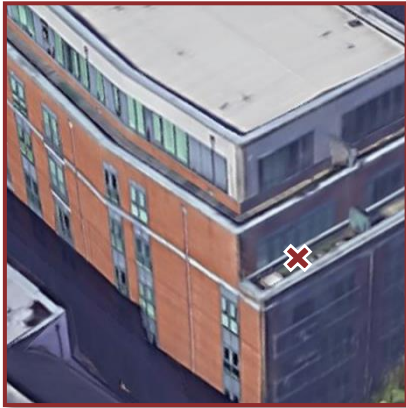
7.5.4.2 Due to the combustibility of the insulation within the construction, replacement of these material may be required.



## 7.6 Inspection Summary: - AREA 6 NO ACCESS AVAILABLE

### 7.6.1 Photographic Evidence for - AREA 6

6A



### 7.6.2 Findings

7.6.2.1 Area 6 was a visual inspection carried out to the 6<sup>th</sup> floor roof terrace area to the South facing elevation to the western most wing (*see photo 6A*).

7.6.2.2 The area could not be accessed due to the current pandemic; however, the make-up was similar to that of Area 4.

### 7.6.3 Regulations:

7.6.3.1 The materials within this location remain covered under the requirements of the mandatory clause **B4(1)** and the provisions regarding external surface (**Diagram 40**), Insulation (**13.7**) and cavities (**section 10**).

### 7.6.4 MHCLG Advice Notes

7.6.4.1 The construction remains guided by the details included within Diagram 1 of the MHCLG document Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings (**Appendix E**) in addition to further content in the complete document (**Appendix C**)

### 7.6.5 Recommendation:

7.6.5.1 The terrace area is consistent with Area 4 in another part of the property, so no further inspection is required. The recommendations should be followed in accordance with those in other areas with the same construction.



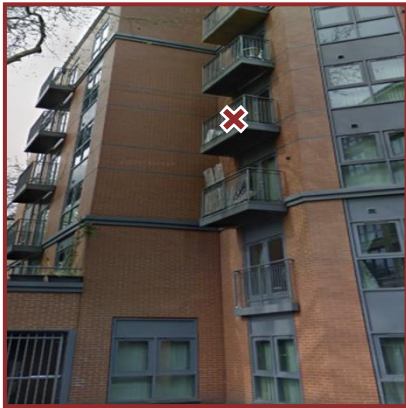
## 7.7 Inspection Summary: - AREA 7

<b>LOCATION OF INSPECTION</b>	
Floor Level	3
Height of Inspection	Approximately 10.0m
Elevation Facing	South
<b>STRUCTURE</b>	
Element/System	Balcony
Type	Cantilever
Manufacturer (Product)	Unidentified
<b>BALUSTRADE</b>	
Material	Steel
Type	Railings
Combustibility Rating	Euroclass A1
<b>SUPPORT FRAMEWORK</b>	
Material	Steel
Type	Frame
Combustibility Rating	Euroclass A1
<b>RAILINGS</b>	
Type	Steel
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass A1
<b>DECKING</b>	
Type	Timber
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass B (if Fire Treated) Euroclass D (if Not)
<b>SOFFIT</b>	
Type	None
Manufacturer (Product)	N/A
Combustibility Rating	N/A
<b>SYNOPSIS</b>	
Does the entire system have or is it likely to achieve a BS 8414-2?	N/A
Has the system been installed in accordance with ADB?	Yes
Are remedial works recommended?	Yes

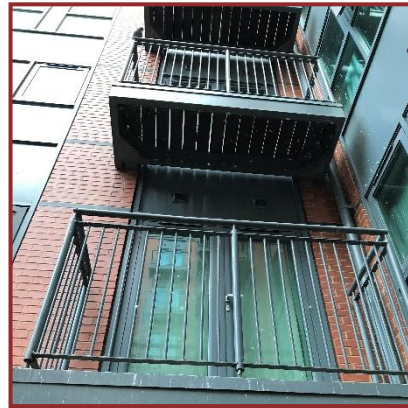


7.7.1 Photographic Evidence for – AREA 7

7A



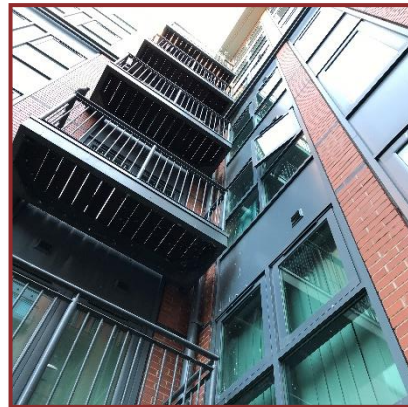
7B



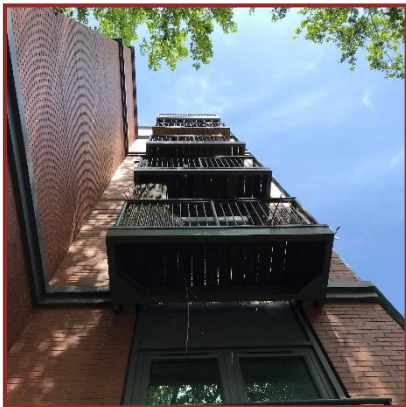
7C



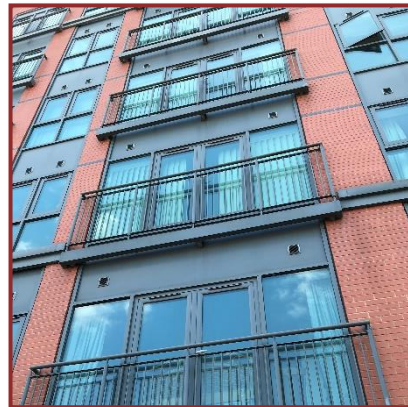
7D



7E



7F





## 7.7.2 Findings

- 7.7.2.1 Area 7 was a non-intrusive visual inspection carried out to the 3rd floor cantilever balcony on the south facing elevation (*see photo 7A*).
- 7.7.2.2 The Balcony was constructed with a steel frame, bolted back to the building structure with a steel handrail and balustrade (*see photo 7B & 7D*).
- 7.7.2.3 The floor of the Balcony was of steel frame which had been decked with Timber decking (*see photo 7C*).
- 7.7.2.4 The balconies continued vertically up the building in line with the curtain glazing (*see photo 7E*). There were also examples of Juliet balconies adjacent (*see photo 7F*). The vertically aligned balconies contained timber decking with no soffit. As a result, the potential for vertical fire spread up the external wall via the exposed decking existed.
- 7.7.2.5 Given the proximity of openable windows adjoining the balconies which may be of adjoining apartments, there may be risks of ignition (*see photo 7D*).

## 7.7.3 Regulations:

- 7.7.3.1 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."*
- 7.7.3.2 There are no provisions regarding balconies which do not constitute part of a fire escape.
- 7.7.3.3 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.

## 7.7.4 MHCLG Advice Notes

- 7.7.4.1 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

- 7.7.4.2 *"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

7.7.4.3 *“The view of the Expert Panel is that the removal and replacement of any combustibile 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.”*

**7.7.5 Recommendation:**

- 7.7.5.1 It is our opinion that the Timber decking would act as an assistant within fire spread and it would be recommended to replace this construction which would achieve limited combustibility or better in accordance with the latest MHCLG Guidance.
- 7.7.5.2 This construction would also be considered as part of a fire safety review required under MHCLG Guidance.
- 7.7.5.3 Human factor plays a large part in the cause of fire. Residents should be reminded of their responsibilities regarding reducing the risk of fire spread.



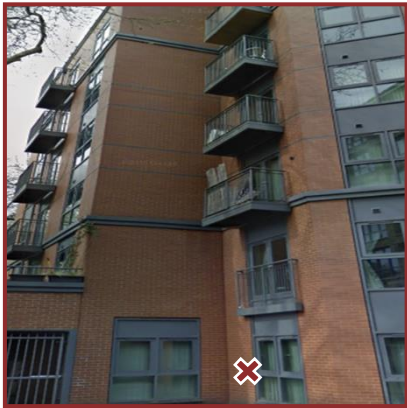
## 7.8 Inspection Summary: - AREA 8

<b>LOCATION OF INSPECTION</b>	
Floor Level	Ground
Height of Inspection	Approximately 1.00m
Elevation Facing	South
<b>STRUCTURE</b>	
Element/System	Brickwork
Type	Traditional
Thickness	90mm
Combustibility Rating	Euroclass A1
<b>INNER STRUCTURE</b>	
Material	Plasterboard
Type	Internal
Combustibility Rating	Euroclass A2
<b>INSULATION</b>	
Type	35mm Phenolic Rigid Foam / 105mm Mineral Wool
Manufacturer (Product)	Unidentified
Combustibility Rating	Euroclass C / Euroclass A1
<b>CAVITY CLOSER</b>	
How is the Cavity Closed at the Opening?	Window Frame
<b>ADDITIONAL SURFACE FINISH</b>	
Is there an additional surface finish?	No
Manufacturer (Product)	N/A
<b>REMEDIATION</b>	
Are remedial works recommended?	Yes

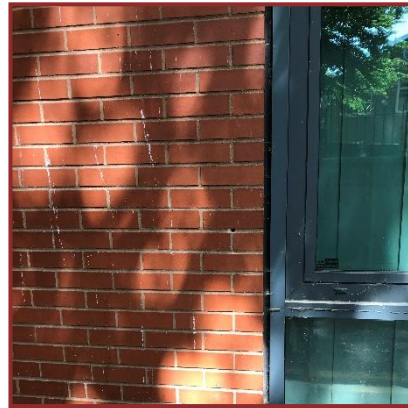


7.8.1 Photographic Evidence for - AREA 8

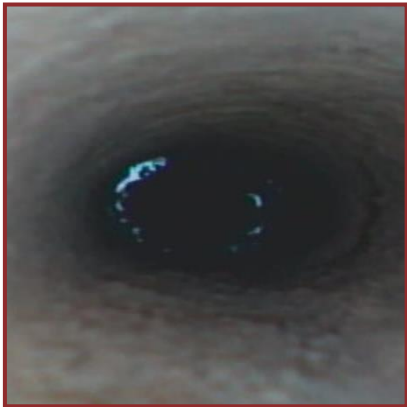
8A



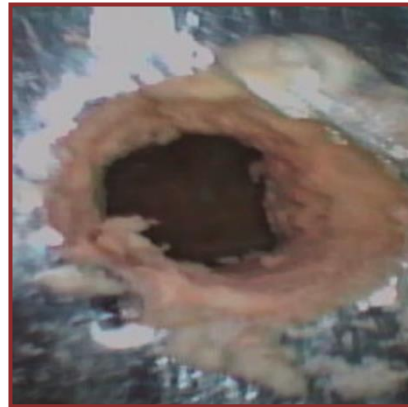
8B



8C



8D



8E



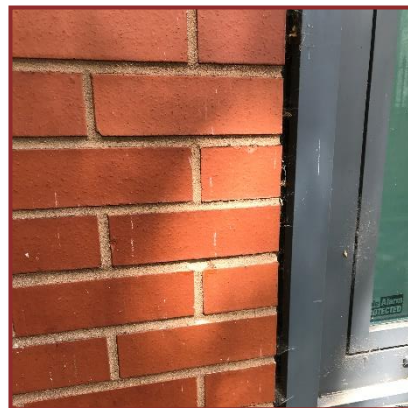
8F



8G



8H





## 7.8.2 Findings

- 7.8.2.1 Area 8 was a drill test inspection carried out from the Ground floor roof of the South Elevation close to Area 7 *(see photos 8A and 8B)*
- 7.8.2.2 The construction was found to be a traditional 90mm brickwork which was in front of a 70mm empty cavity to a combination of 35mm foil faced phenolic rigid foam insulation, a slight cavity followed by and 105mm mineral wool insulation ahead of the internal plasterboard skin *(see photos 8C, 8D, 8E and 8F)*.
- 7.8.2.3 A secondary hole was drilled on the angle towards the window section to confirm how the cavity was closed to the opening. The window frame was visible with no other cavity closer *(see photo 8G)*.
- 7.8.2.4 Following the inspection, the mortar joint was sealed with waterproof mastic following the completion of works *(see photo 8F)*.

## 7.8.3 Regulations:

- 7.8.3.1 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."*
- 7.8.3.2 The regulatory provision requirements are consistent with those outlined for the Masonry section as outlined in sections 7.1.3.2 – 7.1.3.4 of this report.
- 7.8.3.3 As in other areas of the building, the cavity appears to not contain 75mm+ masonry to both leaves (as per Diagram 32), the exemption regarding the use of combustible insulation has not been satisfied.
- 7.8.3.4 Due to the absence of an internal masonry leaf, the evidence we have seen suggests that there have been material non-compliances with the advisory provisions of the ADB regarding the use of combustible thermal insulation, such that we do not think the building facade construction would comply with the mandatory clause within the Building Regulations, namely B4(1).

## 7.8.4 MHCLG Advice Notes:

- 7.8.4.1 According to Diagram 1 of the MHCLG document Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings *(see Appendix E)*, the advised course of action is as follows:
- 7.8.4.2 If the external wall insulation is not of European Class A2-s3, d2 or better;
- but,
- 7.8.4.3 If the external wall system is in line with one that has achieved a BR135 classification via a BS8414 test



then,

7.8.4.4 *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.*****

#### 7.8.5 Recommendation:

7.8.5.1 Our recommendation within this area are consistent with Areas 1 and 3, with an internal inspection recommended prior to wholesale remedial works.

7.8.5.2 This area will be considered in conjunction with other areas under a holistic fire safety review required in accordance with MHCLG Guidance.



## 8.0 Summary

8.1 In light of the items highlighted in this report, we do not think HABITAT '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:

### 8.2 Holistic Fire Safety Review

8.2.1 Due to the identification of combustible 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.

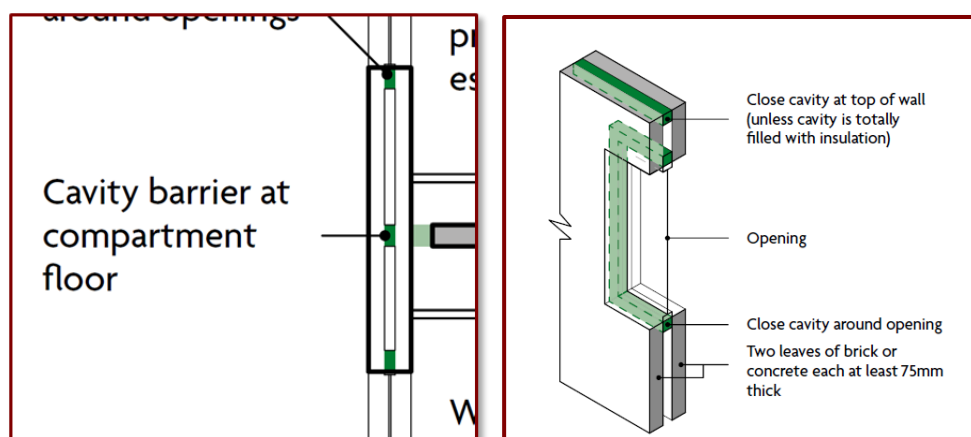
### 8.3 Cavity Barriers:

8.3.1 *"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. "*

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

8.3.3 Section 9 of the Approved Document B2 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."*
- c. With particular attention to cavity barriers around openings in external walls and at compartment floor slabs





## 8.4 Thermoplastic Combustible Insulation

8.4.1 The Phenolic Foam Insulation to the brickwork areas and PIR insulation core within the metallic cladding areas are not all considered 'of limited combustibility or better' and subsequently, the building is non-compliant with the MHCLG Guidance.

## 8.5 Balcony Construction

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

8.5.2 In addition, the following provisions from ADB 2019 – Volume 2 (**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);

8.5.3 “**12.4** – 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.”

8.5.4 “**12.11** - 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).**

8.6 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).**



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## 9.0 Suitability

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- 9.1 This report has been prepared and authorised by Dorian Lawrence MCIQB 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.
- 9.2 As such, this report is suitable to be used to advise on compliance or non-compliance with the MHCLG guidance on cladding.



## 10.0 Appendices

- 10.1 Appendix A: Approved Document B – 2000
- 10.2 Appendix B: Approved Document B – 2019
- 10.3 Appendix C: Advice for Building Owners of Multi-story, Multi-occupied Residential Buildings
- 10.4 Appendix D: Guidance on Further Steps
- 10.5 Appendix E: MHCLG Diagram 1 (below)

