FIREPREVENT

FIRE SAFETY REPORT

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FIRE RISK ASSESSMENTS · TRAINING · CLIENT DEFENCE · DESIGN & PLANNING

Premises	
Premises name	Timber Wharf
Address	32 Worsley Street Castlefield Manchester M15 4GQ

Report Details	
Date of report	26th March 2020
Amendment date	N/A
Requested by	Nigel Gaskell – Mainstay Group
Produced by	Richard Coggon BSc (Hons) MIFireE

Report Sections

1. General Description/Report Purpose
2. Current Building Regulations and Guidance Documents
3. Building Façade and Balconies Review
4. Remedial Actions
5. Conclusion
6. Photographs
7. Further Information

1. General Description/Report Purpose

Scope of Works:

FirePrevent Ltd has been appointed by Mainstay Group to conduct a fire safety survey of the external façade and balconies at Timber Wharf, Manchester.

The purpose of this report is to evaluate the risk posed by the building façade and balconies in the event of a fire. This will be undertaken through an initial desktop study and a site visit to carry out a visual inspection. Samples of the external fabric of the building will be removed where necessary by a third party sub-contractor.

A holistic approach will be taken. The report will not only take into account the materials that make up the external façade but the building fire strategy/fire risk assessment and management policies currently in place.

The findings of the report will establish whether the building conforms to the Building Regulations 2010, Regulatory Reform (fire safety) Order 2005 and Ministry of Housing, Communities and Local Government guidance.

Limitations of Works:

This report deals solely with the materials used to make up the external fabric of the building. It does not comment on any materials used internally within the building.

Building Description:

Timber Wharf is a detached nine storey building plus two basement levels constructed in the early 2000's. The building comprises of two basement car park levels, which also contains two private residential apartments and plant areas such as lift motor room, water tank room and the electrical mains cupboard. The ground and first floors of the development contain a number of commercial units, which are accessed externally. The upper floors (first – eighth) contain private residential apartments. There is a total of 163 private residential apartments throughout the building.

There is a large open entrance lobby leading to a main central staircase to all floors. Escape stairs are provided at each end of the building and access all upper floors.

The fire evacuation strategy for the residential apartments is 'stay put' (only occupants of the apartment of fire origin evacuate). This can be achieved due to the high level of compartmentation that should be present throughout the building.

Figure 1: Building elevation

2. Current Building Regulations and Guidance Documents

Introduction:

Timber Wharf has been designed, constructed and approved under Building Regulations. However, since the Grenfell Tower tragedy, building owners or their appointed competent professional advisor(s) have been advised by the government to check that the external wall systems on their building are safe.

On 20th January 2020, the Ministry of Housing, Communities and Local Government (MHCLG) issued the document - *Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings.* This is a consolidated single document that supersedes Advice Notes 1 to 22. This document represents the MHCLG expert panels position on the action that building owners should take to address the risk of fire spread from unsafe external wall systems.

Building Regulations:

Under the current Building Regulations Requirement B4: External fire spread is as follows –

"(1) 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."

"(2) The roof of the building shall adequately resist the spread of fire over the roof and from one building to another, having regard to the use and position of the building."

Approved Document 7: Materials and workmanship was amended in 2018 and supports regulation 7 of the Building Regulations. It requires the carrying out of building work using the proper materials and in a workmanlike manner. Regulation 7: Materials and workmanship is as follows –

"(1) Building work shall be carried out –

1) *With adequate and proper materials which –*
    - *(i) Are appropriate for the circumstances in which they are used,*
    - *(ii) Are adequately mixed or prepared, and*
    - *(iii) Are applied, used or fixed so as adequately to perform the functions for which they are designed: and*
2) *In a workmanlike manner."*

European Fire Classification Levels:

There are 7 reaction to fire classification levels. This determines how much (if any) a material contributes to the spread of flame.

- A1 and A2 = Non-combustible materials;
- B, C and D = Range from very limited to medium contribution to fire;
- E and F = High contribution to fire.

The 's' part relates to total smoke propagation during the first ten minutes of exposure to fire. These determine a 'smoke' index:

- s1 = little or no smoke;
- s2 = quite a lot of smoke;
- s3 = substantial smoke.

The 'd' part relates to 'flaming droplets and particles' during the first ten minutes of exposure.

- d0 = none;
- d1 = some;
- d2 = quite a lot.

Table 1: European fire classification levels

Definition	Grade	Smoke Propagation	Flaming Droplets
Non-combustible materials	A1	-	
	A2	s1	d0
		and all variations	
Combustible materials: Very limited contribution to fire	B	s1	d0
		and all variations	
Combustible materials: Limited contribution to fire	C	s1	d0
		and all variations	
Combustible materials: Medium contribution to fire	D	s1	d0
		and all variations	
Combustible materials: High contribution to fire	E	E-d2	
Combustible materials: Easily flammable	F		

Guidance Documents:

BS 9991: 2015 Fire safety in the design, management and use of residential buildings – Code of practice is a guidance document and defines a material of limited combustibility as either:

a) A non-combustible material; or
b) Any material of density 300 kg/m^3 or more which, when tested in accordance with BS 476-11 does not flame and the rise in temperature on the furnace thermocouple is not more than 20^{o}C; or
c) Any material with a non-combustible core of 8mm thick or more, having combustible facings (on one or both sides) not more than 0.5mm thick; or
d) A material classified as class A2-s3, d2 in accordance with BS EN 13501-1, when tested in accordance with BS EN ISO 1182 or BS EN ISO 1716 and BS EN 13823.

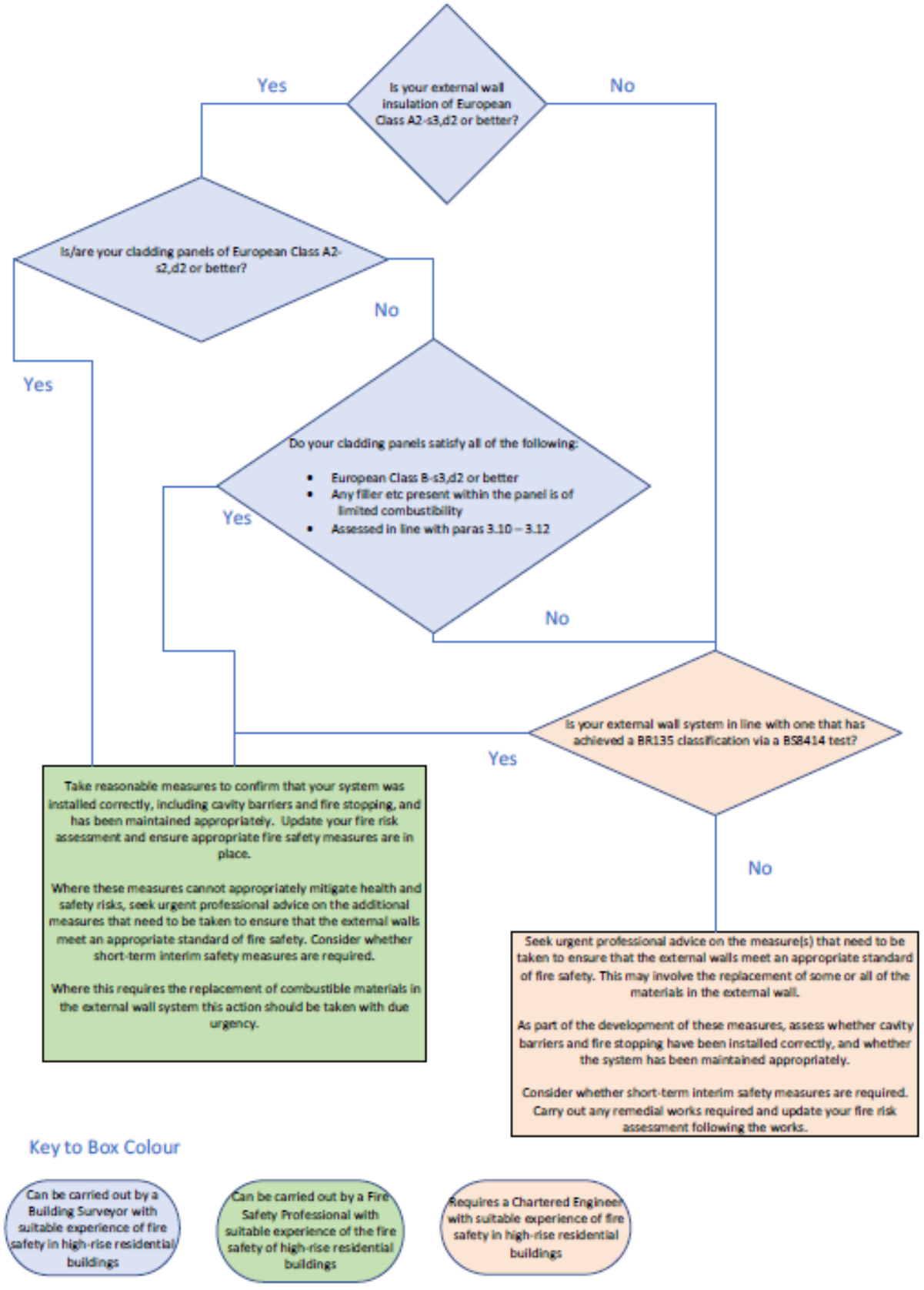
The guidance document states that the external surfaces of walls should be class B-S3, d2 or better. Profiled or flat steel sheet at least 0.5mm thick with an organic coating of more than 0.2mm thickness is also acceptable.
Any cladding material, insulation product, filler material (not including gaskets, sealants and similar), etc., used in the external wall construction should be of limited combustibility as described above.

Approved Document B Volume 1: Dwellings Regulation 7(2) applies to buildings with a storey at least 18m above ground level and which contains one or more dwellings. Regulation 7(2) requires that all materials that become part of an external wall or specified attachment such as a balcony achieve class A2-s1, d0 or class A1. This includes external surfaces and materials and products such as insulation within the cladding system.

BS 9991 and Approved Document B Volume 1 are separate guidance documents and provide differing information regarding the provision of materials on external walls of residential buildings 18m above ground level. The MHCLG *Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings* document gives clarification where these documents contrast.

The MHCLG *Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings* document accepts that some existing buildings are likely to contain cladding system products that achieve class B-S3, d2 for surface spread of flame on the cladding face. This is adequate if any filler materials within the product and any insulation materials are of limited combustibility (class A2-s3, d2 or better). See the process chart for assessing external wall systems below.

Figure 2: MHCLG process chart for assessing external wall systems



Cavity Barriers:

Cavity barriers should be provided within the external façade where any line of compartmentation (i.e. a compartment wall or floor) abuts the external façade system. As the building is residential, cavity barriers will be required horizontally at every floor level and vertically adjacent to every wall separating the apartments. In addition to this, cavity barriers should be provided at 20 metre centres within the external façade in order to meet the requirements of the Building Regulations. Cavity barriers should provide a minimum fire resistance of 30 minutes integrity and 15 minutes insulation.

Cavity barriers should be provided around every opening within the façade. This includes around windows, doors, ventilation penetrations and other service penetrations.

Cavity barriers surrounding openings can consist of any of the following:

- Steel at least 0.5mm thick;
- Timber at least 38mm thick;
- Polythene sleeved mineral wool or mineral wool slab, in either case under compression when installed in the cavity;
- Calcium silicate, cement based or gypsum based boards at least 12mm thick;
- Any other material which provides the required fire resistance (30 minutes integrity and 15 minutes insulation).

3. Building Façade and Balconies Review

The review looks at the following aspects of the façade, balcony and building in general:

1) External facing materials used on the building façade;
2) Balcony frame material and floor type;
3) Building frame type;
4) Cavity barriers;
5) Distance of adjacent buildings;
6) Position of car parking in relation to the building;
7) Position of waste storage;
8) Building security measures;
9) Building fire safety measures;
10) Management policy on balcony use.

1) External facing materials used on the building façade:

Table 2: List of products used on the external face of the building façade

Material/Manufacturer	Use	European Classification under BS EN 13501-1:2007	Combustibility	Notes
Concrete	Building structure and face	A1	Non-combustible	Compliant
Glazing with metal frame	Windows and doors	Unknown	Non-combustible	Compliant
Glazing with a steel wall structure	Façade glazing system fitted to a steel wall structure in the open entrance lobby	Unknown	Non-combustible	Compliant
Timber	An external face of each side escape stair core is fitted with timber ventilation louvres The basement rear external wall is fitted with timber louvres	C	Combustible materials: Limited contribution to fire	Compliant See Notes 1 and 2 below.

Notes:

1) The use of timber ventilation louvres in the external face of each side escape stair core is acceptable in this instance due to the following:
   - The timber ventilation louvres form part of the side escape stairs, which are fire separated from all other areas of the building by a minimum of 60 minutes fire separation;
   - The ventilation louvres are in place to allow smoke to discharge from the escape stairs;
   - The escape stairs contain no other combustible materials and limited ignition sources (light fittings only);
   - If the timber ventilation louvres caught fire, this would not affect any other areas of the building and would not put occupants of the building at risk.

2) The use of timber ventilation louvres in the basement rear external wall is acceptable in this instance due to the following:
   - The timber louvres allow smoke to discharge from the basement car park in the event of a fire;
   - The basement car park is 60 minutes fire separated from all other areas of the building;
   - If the timber ventilation louvres caught fire, this would not affect any other areas of the building and would not put occupants of the building at risk.

2) Balcony frame material and floor type:

The balcony structure is concrete and forms part of the building structure. The balcony surround is fitted with glazed panels.

The balcony floor is concrete with timber decking boards laid over the top. The timber decking boards will likely be combustible however, there is no requirement to replace the decking boards.

A fire in an apartment that breaks out of the apartment of origin onto the balcony may cause the decking boards of that balcony to become involved in fire. This will not lead to external fire spread beyond the apartment of fire origin as the underside of the balconies on all floors are constructed of concrete. The timber decking boards of the balcony above would therefore not be affected by a fire from the apartment below. Similarly, the distance between separate apartment balconies horizontally and the orientation of the decking boards would not lead to external fire spread horizontally.

3) Building frame type:

The building is predominantly concrete frame with some steel frame construction and concrete floors.

4) Cavity Barriers:

Cavity barriers are not provided or necessary as part of the concrete envelope of the building.

It is unclear whether cavity barriers are provided around external openings such as windows. This is acceptable due to the low risk that the building façade represents overall.

5) Distance of adjacent buildings:

The space separation of the building from its relevant boundaries has been assessed in relation to preventing external fire spread.

Due to the heavy compartmentation afforded to the building and the materials present on the external face it has been calculated that all elevations have a permitted unprotected area of 100%.

6) Position of car parking in relation to the building:

There is a road on the south elevation of the building where cars may be able to park in close proximity to the building. There are however parking restrictions on the full length of the road. Car parking for residents is provided in the two basement car parking levels, which is accessed via secure shutters.

7) Position of waste storage:

Waste storage is positioned in the secure basement car park bin stores, which are linked to the internal bin chutes. The bins are regularly emptied by a waste disposal company.

8) Building security measures:

Access to the building is key fob controlled.

9) Building fire safety measures:

A fire risk assessment being carried out every two years and the latest report was produced 27th July 2018. According to the fire risk assessment the building is in an overall good condition with adequate compartmentation to support a 'stay put' fire strategy.

Management have ensured all deficiencies that were highlighted in the fire risk assessment dated 27th July 2018 have been actioned.

10) Management policy on balcony use:

Management have a policy in place that does not allow barbeques and combustible storage on balconies.

Management are in the process of issuing letters to all residents giving them information on the dangers of having large amounts of combustible furniture and storage on their balconies.

3) Remedial Actions

The following remedial solutions will reduce the risk of external fire spread at Timber Wharf. Once all actions have been carried out, the building will be compliant with the Building Regulations 2010, the Regulatory Reform (fire safety) Order 2005 and MHCLG *Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings.*

Table 3: Remedial solutions required for compliance

Significant Hazard	Additional Control Measures
Combustibles present on balconies such as wooden furniture and storage items.	Management should carry out regular inspections where possible to ensure balconies are being kept free of combustible furniture and storage.

4) Conclusion

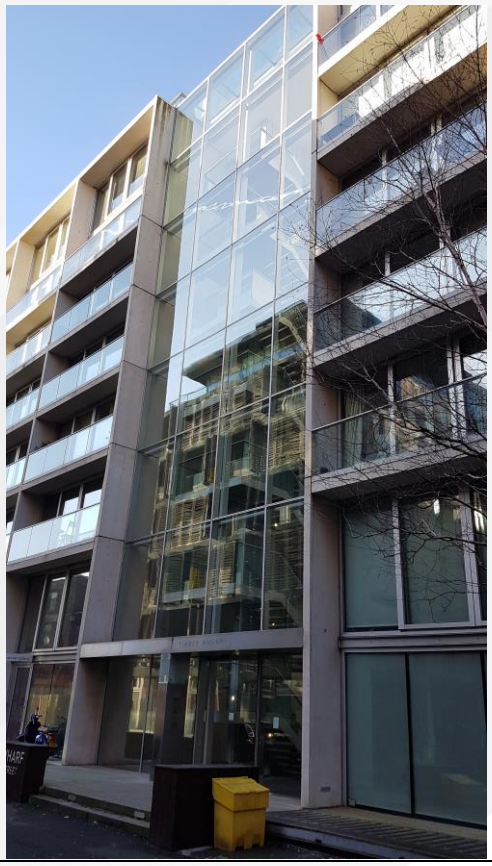
The results of this assessment show that on the whole the materials used in the construction of the external façade system are fully compliant with the functional requirements of Part B of the Building Regulations 2010, the Regulatory Reform (fire safety) Order 2005 and MHCLG *Advice for Building Owners of Multi-storey, Multi-occupied Residential Buildings.*

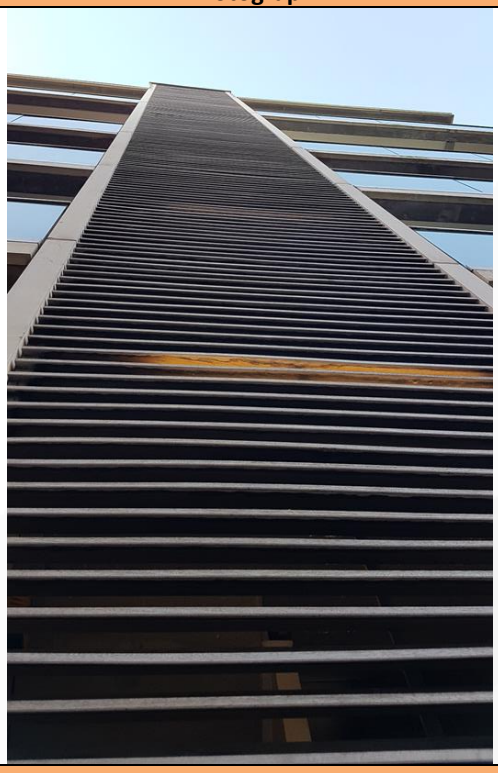
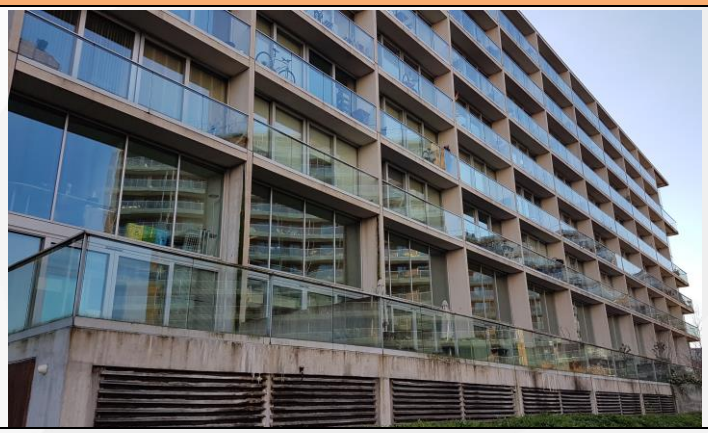
Where combustible materials have been used on external walls and to provide decking on balcony floors, this has been highlighted in the report and deemed acceptable based on existing control measures currently in place.

Overall the external fire spread risk for the Timber Wharf building is Low.

5) Photographs

Table 4: Photographic evidence of façade materials

Description	Photograph
Concrete and glazed façade.	
Glazed façade with steel wall structure.	

Description	Photograph
Timber louvres in side escape stair façade.	
Timber louvres in basement car park.	

6) Further Information

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