

Housing Health and Safety Rating System (HHSRS)

Case Studies

Group A
Protection Against
Accidents

Hazard A4
Fire and Explosions

Example A4.5
Post-1979
Self-contained Flat

Vulnerable Group
All persons aged
60 years and over

Multiple Locations
Yes

Related Hazard A7
Structural Collapse and
Falling Elements

Related Hazard A8
Electrical Hazards

Related Hazard B13
Indoor
Air Pollutants

Related Hazard D18
Crowding and
Space

Dwelling

Description

The property in question is a self-contained, single-storey flat in a purpose-built block constructed in 2012. The flat is located on the 18th floor of the development, which has 20 floors in total and a height of over 50 metres.

The development appears to be a concrete and steel-framed structure with a cladding system.

The flat comprises one bedroom, a separate bathroom, an open-plan kitchen and living area and a cupboard housing the hot water cylinder. All rooms are accessed via a central internal hall. The flat’s entrance door (labelled a 60-minute fire-resisting door) opens onto the communal corridor. A balcony serves both the living area and the bedroom, accessible via metal-framed double-glazed doors. The balcony is cantilevered and steel framed, with glass balustrading and an open timber deck.

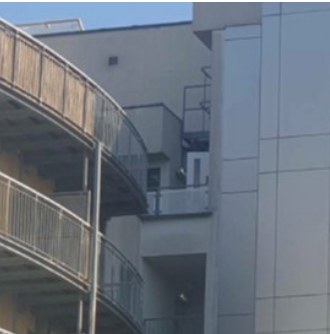
The flat is served by a communal heating system and communal ventilation system, the latter having ventilation points in the cladding system.

Neither the bathroom nor the kitchen area has any windows, though there is adequate artificial light.

There is a fire blanket provided in the kitchen, a grade LD2 fire alarm system comprising a mains-wired smoke detector in the hall, and a mains-wired heat detector in the kitchen area. A fire-action notice is present on the back of the front door, reflecting an overall ‘stay put’ policy for fires outside the flat of origin and a ‘simultaneous evacuation’ for fires within flats. The internal doors of the flat are labelled as 30-minute fire resisting.

The flat is occupied by a single household, comprising two adults. It is owned by a leaseholder who is part of the right-to-manage (RTM) company that manages the block as a whole. The leaseholder sublets to the couple occupying the flat.

The flat has a valid EPC with a B rating.
Landlord’s gas safety certificate – Not applicable (no gas to flat; it has communal heating)
Landlord’s EICR certificate – Not present
Fire risk assessment – Not required for flat
Building safety case – Not required for flat



1
Property exterior showing
ACM panelling and
balconies to flats

Certification	
EPC	B Rating
Landlords Gas Safety	N/A
Landlords EICR	N/A
Fire Risk Assessment	N/A
Building Safety Case	N/A
Electrical Installation	Missing

Deficiencies

Description

It is known that the cladding system to the building, comprises phenolic solid thermal insulation and rainscreen material, the latter being a Category 1 Aluminium Composite Material (ACM). Cavity barriers are known to be present and of the correct standard. The flooring of the balconies is made of timber decking attached to a metal frame. There is no drip tray beneath the decking. Ventilation penetrations to the cladding are adequately fire-stopped.

The flat has no electrical installation certificate and lacks a sprinkler system.

The doors to the kitchen/living area and bedroom have been wedged open.

The front door to the flat is labelled as a 60-minute fire-resisting door, though only has one combined cold smoke seal and intumescent strip rather than the standard two combined strips. The overhead closer is not functioning as intended.

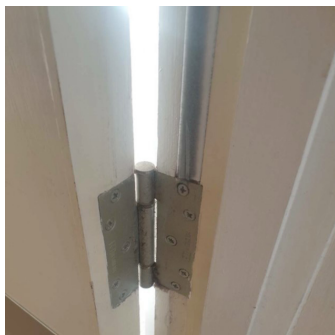
There is a solid-fuel barbecue and gas-fired 'patio heater' stored on the balcony, and the tenants have confirmed these are used.

The block of flats has one means of escape.

Note: This assessment is of the flat, not the common parts. Whilst there would be an FRA required for the building, there would not be one of for the flat itself. Once the occupants of the flat have 'escaped' to the common parts of the block itself, then the assessor must assume the block itself is adequate. There are of course overlaps in this assumption, such as how the external EWS is a contributory factor in this assessment though a common part – because the EWS and balcony interact and the balcony is within the demise of the flat – this must be considered. Similarly, the flat entrance-door is also a contributory factor because if the door is open or closed but has insufficient strips, then smoke could get into the 'safe' corridor, affecting the place of safety.



2
Balcony showing timber decking construction and use of patio heater



3
Single strip and seal to the FD60 door (note missing piece of seal)

Relevant Baseline Indicators (BI)

0

Satisfactory
or N/A

1

Not
Satisfactory

2

Defective

3

Seriously
Defective

Subject		Score				BI	Baseline Indicators
8	Internal Doors	0	1	2	3	8.1	Internal doors leading between areas of a single dwelling must provide a sufficient barrier to the spread of smoke and fire, any glazing must respond safely to collision, and must be designed for functionality to avoid strains or entrapment when in use and must be maintained in good repair. All bathrooms and WC doors must be fitted with a suitable lock and not contain clear glass.
19	Fire Safety	0	1	2	3	19.4	The electrical installation should have been inspected and tested within the last 5 years.
		0	1	2	3	19.5	There should be sufficient, properly designed and appropriately sited smoke and heat detectors with alarms in every dwelling. These should be properly maintained and regularly tested.

Other Relevant Matters

0

Satisfactory
or N/A

1

Not
Satisfactory

2

Defective

3

Seriously
Defective

Consideration of likely scenarios for Fire and Explosions

The assessor is to consider the likelihood of a fire igniting within the scenario presented and the likelihood of that fire becoming uncontrolled. The outcomes relate to the impact of the fire to persons, and includes the effects of smoke inhalation.

The assessor is to consider the likelihood of an explosion occurring and its source, and whether that explosion is also likely to lead to a fire ignition. These outcomes are dependent upon the location of the explosion and the provisions within the building to contain the explosion.

Please see the Operating Guidance part 3, section 9, for explanations of the relevant matters

Matters affecting Likelihood of Harm

0

1

2

3

Electrical sources of ignition

0

1

2

3

Smoking management

0

1

2

3

Potential for arson

0

1

2

3

Accidental fire spread

0

1

2

3

Cooking provision

0

1

2

3

Fixed heating

0

1

2

3

Lightning

0

1

2

3

Laundry facilities

0

1

2

3

Multiple occupation and
overcrowding

0

Satisfactory
or N/A

1

Not
Satisfactory

2

Defective

3

Seriously
Defective**Matters affecting both Likelihood and Harm Outcomes**

0	1	2	3	Escape route
0	1	2	3	Dwelling layout
0	1	2	3	Travel distance
0	1	2	3	Operation of exits
0	1	2	3	Obstructions
0	1	2	3	Non-fire resisting fabric – allowing fire to spread.
0	1	2	3	Smoke permeable fabric – allowing smoke to spread.
0	1	2	3	Fire stops to cavities – lack of, allowing fire to spread.
0	1	2	3	Disrepair to fabric – walls, ceilings and/or floors may allow smoke, fumes and/or fire to spread.
0	1	2	3	Internal doors – insufficient doors or doors of inappropriate materials or ill-fitting doors.
0	1	2	3	Fire-resisting construction (including any glazing) protecting escape routes
0	1	2	3	Measures to ensure that fire-resisting doors are maintained in the closed position
0	1	2	3	Smoke Control
0	1	2	3	Artificial lighting
0	1	2	3	Levels of compartmentation
0	1	2	3	Provision of appropriate Fire Safety Signs
0	1	2	3	Fire Detection and Alarm Systems

0	1	2	3	Provision of fire-fighting equipment
0	1	2	3	Fire suppression system

Matters related to cladding

0	1	2	3	Condition of cladding
0	1	2	3	Combustibility and fire performance of external wall construction and cladding
0	1	2	3	Location and adequacy of cavity barriers
0	1	2	3	Presence/maintenance of dry/wet rising mains
0	1	2	3	Presence/maintenance of Firemen's/Firefighting/Firefighters lifts
0	1	2	3	Access arrangements to the site and the building for the fire and rescue service
0	1	2	3	Balconies

Matters related to explosions

0	1	2	3	Unauthorised gas supply
0	1	2	3	Siting of gas tanks
0	1	2	3	Ventilation
0	1	2	3	Hot water storage tank
0	1	2	3	Vented hot water system
0	1	2	3	Unvented hot water system

Likelihood of Harm

Scale Points

Likelihood of harm from this hazard over the next twelve months

Very Likely		1 in 1	
		1 in 2	
		1 in 3	
		1 in 5	
Likely		1 in 10	
		1 in 20	
		1 in 30	
		1 in 50	
Unlikely		1 in 100	
		1 in 200	
		1 in 300	
		1 in 500	
Very Unlikely	Example Dwelling	1 in 1,000	
		1 in 2,000	
	National Average	1 in 3,000	
		1 in 5,000	
		Score	
		1 in 1,000	

Justification of Scoring
Likelihood of Harm

Guidance on external wall systems on high-rise residential advises that ACM cladding with a limited-combustibility filler (Category 1) can be used safely depending on how it has been fitted. However, combined with the presence combustibile timber decking, with barbecue and gas heaters (plus cannisters) as an ignition source, increase the likelihood of an uncontrolled fire affecting the flat from the balcony. In addition to this, the absence of an EICR (meaning that the electrics could be an ignition source) and poor management of internal use of doors will allow fire and smoke to spread around the flat. The lack of a sprinkler system allows for spread of fire within the flat. These elements have resulted in an increase in likelihood.

Harm Outcomes

Extreme		Severe		Serious		Moderate	
Death, permanent paralysis, etc.		Heart attack, serious fractures, etc.		Chronic stress, severe concussion, etc.		Broken fingers, moderate cuts, etc.	
Very Likely	50.0	Very Likely	50.0	Very Likely	50.0	Example Dwelling	84.0
	30.0		30.0		30.0		National Average
	20.0		20.0		20.0		90.0
Likely	10.0		10.0	Example Dwelling	10.0	These scores are simply calculated as the sum of the other three harm outcomes subtracted from 100%	
	5.0		5.0		5.0		
	2.0		2.0		2.0		
Unlikely	1.0	Example Dwelling	1.0	Unlikely	1.0		
	0.5		0.5		0.5		
	0.2		0.2		0.2		
Very Unlikely	0.1	Very Unlikely	0.1	Very Unlikely	0.1		
	0.0		0.0		0.0		
National Average		National Average		National Average			
Score		Score		Score		Score	
5.0%		1.0%		10.0%		84.0%	

Justification of Scoring

Harm Outcomes

An LD2 detection system is limited to hall and kitchen of the flat; therefore, a fire affecting the balcony is unlikely to trigger the alarm system quickly, though the fact that the internal doors are wedged open means that smoke will set off the smoke detector quicker than had they been closed. The defects to the flat’s entrance door could compromise the place of safety (the corridor) due to smoke. Absence of a sprinkler system presents a significant defect because this should be present in a

block of this size. These factors combined mean there is an increase to Class II and III harms.

In terms of day-to-day living, occupants will probably suffer from significant mental distress upon becoming aware of the high fire risk associated with the external cladding system on the building, impacting ‘Severe’ and ‘Serious’ harms.

Safety Ratings

Scenario 1
As described in this document

Key

Category	Band	Score
1 Legal duty to take action	High	10,000
2 Discretion to take action	Medium	1,000
	Low	100

Likelihood of Harm
1 in 1,000

Extreme 5.0%	Severe 1.0%	Serious 10.0%	Moderate 84.0%
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Category	Band	Score
1 Legal duty to take action	High	10,000
2 Discretion to take action	Medium	1,000
	Low	100
Example Dwelling		55
National Average		17

Score
55

Scenario 2

After works meeting baseline indicators

Scenario 3

After further improvements

Likelihood of Harm
1 in 2,000

Extreme 5.0%	Severe 0.0%	Serious 5.0%	Moderate 90.0%
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Category	Band	Score
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1 Legal duty to take action	High	10,000
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2 Discretion to take action	Medium	1,000
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Low	100
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Example	27
National Average	17

Score
27

Likelihood of Harm
1 in 3,000

Extreme 5.0%	Severe 0.0%	Serious 5.0%	Moderate 90.0%
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Category	Band	Score
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1 Legal duty to take action	High	10,000
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2 Discretion to take action	Medium	1,000
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Low	100
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Example Dwelling +	17
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Score
17

Justification of Scoring

After works meeting baseline indicators

Implementation of BIs would see improvements to the front door and the provision of an EICR, together with any necessary associated works, but these would not fully mitigate the issues associated with the dwelling.

Justification of Scoring

After further improvements

Further works could entail the installation of a sprinkler system and replacement of the timber decking to the balcony. It might also be beneficial to extend the detection system to all rooms, giving a much quicker response to the presence of a fire from the EWS/balcony.

Other Relevant Legislation and Guidance

Updates

Matters for consideration listed in this section were correct at the time of publication. For the most up-to-date legislation and guidance in these areas, please visit the [gov.uk](https://www.gov.uk) website.