

Housing Health and Safety Rating System (HHSRS)

Case Studies

Group B
Physiological
Requirements

Hazard B14
Excess Heat

Example B14.1
Post-1979
Ground-floor Flat
(Non-HMO)

Vulnerable Group
All persons aged
65 years and over

Multiple Locations
Yes

Related Hazard C16
Domestic Hygiene

Related Hazard D19
Entry by Intruders

Related Hazard D20
Noise

Dwelling

Description

This is a ground-floor flat in a four-storey purpose-built development, completed in 2012. It is typical of the flats in the block. All the flats are leasehold and subject to restrictions imposed by the management company for the development.

It is situated on the edge of a city centre, with mainly hard landscaping externally and only small areas of grass or foliage to absorb heat or water. Traffic in the evenings and at night is light but noticeable; the area is residential and otherwise quiet.

The flat is dual aspect and comprises a lounge (east-facing); master-bedroom (west-facing); second bedroom (west-facing); a kitchen and a bathroom, with the latter two rooms having no windows, but mechanical ventilation only with heat recovery. The bedrooms both

have french doors, each having a Juliet balcony as the sole means of ventilation. These are essentially set flush with the face of the external wall. Within the lounge, ventilation is provided by a large door-and-window combination that leads out to a small terrace. The door/window is set flush with the face of the external wall. All windows, etc. are of uPVC double-glazed construction, with the glazing having a relatively modest total solar radiant transmission.

The wall and (flat) roof construction have a high level of thermal resistance, meeting the requirements of the current building regulations. A solar reflective finish has not been applied to the roof covering. Heating provision in the flat is from thermostatically controlled electric night storage heaters, with hot water being from an insulated hot water cylinder.



1

Front exterior

Deficiencies

Description

There is significant solar heat gain when the sun is directly on the west-facing windows. There is a lesser effect when the morning sun is directly on the east-facing windows.

The sole means of ventilation is via sliding doors, with no facility to securely limit or fix the size of opening once unlocked, presenting an opportunity for intruders if left open. These doors do, however, allow for more draught if left open than a top-opening casement window would, especially when a through-draught is required to cool the flat during periods of hot weather. The hard landscaping surrounding the building stores and reflects heat into the flat, and there is no solar shading from the small areas of grass or foliage between the building and road. The kitchen overheats in hot weather and the fridge and freezer generate more heat as they have to work harder to keep their contents cool. There is no summer bypass to the mechanical ventilation system to disable heat recovery.



2
Living room door



3
Bedroom door

Relevant Baseline Indicators

0

Satisfactory
or N/A

1

Not
Satisfactory

2

Defective

3

Seriously
Defective

Subject	Score	BI	Baseline Indicator
4	Sanitary Facilities: Bathroom	0 1 2 3	4.8 Ventilation for the bathroom must be provided by mechanical extraction that is ducted to the outside of the building in line with baseline indicator 16.1.
5	Sanitary Facilities: Kitchen	0 1 2 3	5.6 Suitable facilities for the effective and safe removal of fumes and moisture laden air to the external air by means of a cooker hood or extractor fan; a cooker hood that only recycles the odour through an active carbon filter would not be acceptable, it must vent to outside. A mechanical extractor would be the normal mechanism for this function in line with baseline indicator 16.1.
15	Heating and Insulation	0 1 2 3	15.1 Structural thermal insulation shall be provided to minimise heat loss. Where there is a loft space, insulation shall be provided as detailed: A minimum 250mm of loft insulation (assumed to be mineral wool or similar).
		0 1 2 3	15.2 Hot water cylinder, if present, must be insulated with a minimum 50mm jacket if not pre-insulated, and it must be fitted with a tank thermostat.
		0 1 2 3	15.3 If the walls are of cavity wall construction, they must be insulated unless professional examination confirms unfeasible, due to either their condition or location in terms of wind-driven rain, or the width of the cavity being less than 40mm.
		0 1 2 3	15.4 Every dwelling shall have a properly installed heating system in good and safe working condition that is capable of safely and adequately heating all habitable rooms, bathrooms, and toilet rooms. The system must be capable of heating the main living area to 21°C, and the remaining habitable rooms to a temperature of 18°C when the external temperature is minus 1°C, and the system should not allow the temperature to exceed 25°C in any room during the heating season.
		0 1 2 3	15.5 Heating and hot water should be capable of being controlled effectively and timed to operate by the occupiers.

Relevant Baseline Indicators
(continued)

0

Satisfactory
or N/A

1

Not
Satisfactory

2

Defective

3

Seriously
Defective

Subject	Score	BI	Baseline Indicator
16 Ventilation	0 1 2 3	16.2	All habitable rooms must have at least one window, door or skylight which opens to the outside and can be fixed in an open position. In addition, ventilation may also be provided by the presence of trickle vents, air bricks or passive stack ventilation.
	0 1 2 3	16.3	In each habitable room, the size of the openable windows, doors and skylights together must be at least 5% of the floor area of that room.
	0 1 2 3	16.4	All means of ventilation shall be maintained in good repair and working order.

Relevant Matters

0

Satisfactory or N/A

1

Not Satisfactory

2

Defective

3

Seriously Defective

Score					Matters affecting Likelihood of Harm
0	1	2	3		Thermal insulation
0	1	2	3		Thermal mass
0	1	2	3		Glazing orientation
0	1	2	3		Cross-ventilation
0	1	2	3		External shading
0	1	2	3		Dwelling location

Score					Matters affecting Harm Outcomes
0	1	2	3		Thermal insulation
0	1	2	3		Thermal mass
0	1	2	3		Glazing orientation
0	1	2	3		Cross-ventilation
0	1	2	3		External shading
0	1	2	3		Dwelling location

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	
	Example Dwelling	1 in 200
	1 in 300	
	1 in 500	
	Very Unlikely	1 in 1,000
1 in 2,000		
1 in 3,000		
National Average		1 in 5,000

Score

1 in 200

Justification of Scoring

Likelihood of Harm

Whilst the building has good thermal insulation, the dwelling is subject to uncontrolled heat gain due to a combination of factors, namely: orientation; solar exposure; urban location; normal everyday activity; poor heating system agility; and heat recovered from extracted air.

The solar gain is compounded by the size and orientation of the windows and the lack of structural shading: the windows are flush with the face of the external walls and have no architectural features designed to provide shadowing.

Night storage heating is not very responsive as the input must be organised in advance and output may well be necessary during cooler periods of the day. Outputs are difficult to manage consistently, and the inherent complexity of the system may present issues to the vulnerable group in particular.

It will be difficult to reduce the indoor temperatures as the mechanical extract provision will return heat due to the heat recovery system in place. The ground-floor position of the dwelling makes leaving the windows open unappealing due to fear of intruders and the noticeable external noise.

The factors above will lead to uncomfortable and, on occasion, unhealthily high temperatures for significant periods of time, increasing the likelihood someone within the vulnerable group may suffer from the effects of excess heat.

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	30.0
Example Dwelling + National Average	30.0		30.0	Example Dwelling + National Average	30.0	National Average	30.0
	20.0		20.0		20.0	These scores are simply calculated as the sum of the other three harm outcomes subtracted from 100%	
Likely	10.0	Example Dwelling + National Average	10.0	Likely	10.0		
	5.0		5.0		5.0		
	2.0		2.0		2.0		
Unlikely	1.0	Unlikely	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		
Score		Score		Score		Score	
30.0%		10.0%		30.0%		30.0%	

Justification of Scoring
Harm Outcomes

There is no reason to believe the potential spread of harm outcomes will be any different to the national average.

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 200

Extreme 30.0%	Severe 10.0%	Serious 30.0%	Moderate 30.0%
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Category	Band	Score
1 Legal duty to take action	High	10,000
Example Dwelling		1,597
2 Discretion to take action	Medium	1,000
	Low	100
National Average		64

Score
1,597

Scenario 2

After works meeting baseline indicators

Likelihood of Harm 1 in 200			
Extreme 30.0%	Severe 10.0%	Serious 30.0%	Moderate 30.0%
Category		Band	Score
1 Legal duty to take action	High		10,000
	Example Dwelling		1,597
2 Discretion to take action	Medium		1,000
	Low		100
National Average			64
Score 1,597			

Justification of Scoring

After works meeting baseline indicators

Baseline indicators are either in place or the provision is an accepted version so there is no change.

Scenario 3

After further improvements

Likelihood of Harm 1 in 5,000			
Extreme 30.0%	Severe 10.0%	Serious 30.0%	Moderate 30.0%
Category		Band	Score
1 Legal duty to take action	High		10,000
	Medium		1,000
2 Discretion to take action	Low		100
	Example Dwelling + National Average		64
Score 64			

Justification of Scoring

After further improvements

To return the likelihood and score to national averages, it would be necessary to alter the doors so they can be secured in a partial open position, increase natural shading to the west side of the building, and modify the existing mechanical ventilation system to offer a summer setting.

It would be possible to implement other measures that would reduce the likelihood and hazard further, such as provision of an air conditioning unit, installing blinds or curtains which could be closed to reduce solar gain, or replacing the doors with a double-glazed openable window with low-emissivity coating (fitted with appropriate locks and restrictors for safe overnight use).

Other Relevant Legislation and Guidance

Leasehold Properties

In a leasehold property, there may be restrictions on works that can be carried out without the freeholder and management company's express approval. This could include, for example, alteration of doors and windows as well as maintenance of the structure of the building (e.g. the roof).

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.