

Housing Health and Safety Rating System (HHSRS)

Case Studies

Group A
Protection Against
Accidents

Hazard A4
Fire and Explosions

Example A4.9
Post-1979
House

Vulnerable Group
All persons aged
60 years and over

Multiple Locations
No

Related Hazard B9
Excess Cold

Dwelling

Description

This is a one bedroomed ‘cluster’ house, built in the 1980s and currently rented to a couple. The ground floor has an open-plan kitchen/dining/living room with stairs to a mezzanine floor, where a partition wall has been built to provide privacy to the bedroom.

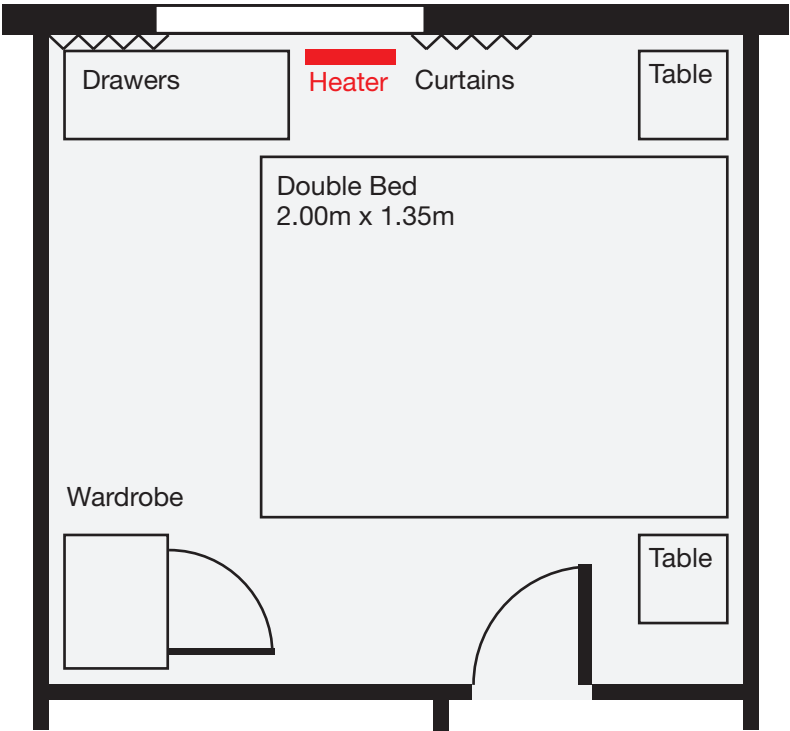
The electrical installation is satisfactory, and the EPC is E rated.

Certification

EPC	E rating
Landlords Gas Safety	None
Landlords EICR	N/A
Fire Risk Assessment	N/A
Building Safety Case	N/A
Electrical Installation	Satisfactory



1
Front elevation



2
Bedroom Floorplan
2.70m x 2.40m

Deficiencies

Description

A gas convector fire is situated and vented directly under the bedroom window such that the curtains drape over the fire. The small shape and size of the room and door position make it difficult to position the furniture (a double bed, small wardrobe, chest of drawers and bedside tables) in such a way so as to keep the bedding a safe distance from the fire.

There is a gas convector fire in the open-plan ground floor; this is more appropriately located. These gas convector fires date back to the 1970s and do not comply with the current gas safety regulations.

There is no gas safety certificate.

The dwelling has one battery-powered smoke detector positioned at the head of the stairs.

The window in the bedroom is small and not to escape standard. This means that the only escape route from the mezzanine bedroom is down the stairs and into the open-plan ground-floor room to the final exit-door.



3
Gas heater in bedroom



4
Close-up of gas heater

Relevant Baseline Indicators (BI)

0

Satisfactory
or N/A

1

Not
Satisfactory

2

Defective

3

Seriously
Defective

Subject		Score				BI	Baseline Indicators
15	Heating and Insulation	0	1	2	3	15.6	Water heaters, wood stoves and other devices that employ combustion-burning fuel shall be vented to the outside of the structure in an approved manner that meets the manufacturer specification and in compliance with applicable standards, and shall be supplied with sufficient air to support the continuous complete combustion of fuel and prevent back-drafting or the emission of harmful gases to any internal or enclosed spaces. The chimney must be maintained in accordance with the manufacturer requirements, including sweeping and inspection.
19	Fire Safety	0	1	2	3	19.3	An annual gas safety check should have been undertaken within the last 12 months with a satisfactory result. Any heating provided by LPG shall be inspected by a suitably qualified engineer annually.
		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.
		0	1	2	3	19.6	The escape route from bedrooms through habitable rooms should either be avoided, or mitigated, by other provisions.
		0	1	2	3	19.7	Egress through doors/windows that are required for means of escape should not require the use of a key or a code.

Other Relevant Matters

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.

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	Example Dwelling	1 in 100
		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 100		

Justification of Scoring
Likelihood of Harm

The fire risk will be elevated during cold winter weather and the longer hours of darkness as the gas fire is more likely to be used with the curtains closed, in direct contact with the appliance. Lack of safety checks and maintenance of this type of fire may also give rise to the risk of explosion in the event of a fire. It may be that the gas fire will be mostly in use during mornings and evenings rather left on overnight when the occupant is asleep. The risk of fire is therefore higher when the occupant is awake and able to respond more quickly.

Early warning of a fire would be provided by the battery-powered smoke alarm at the head of the stairs if functioning correctly, and the short travel distance to a point of safety reduces the likelihood of harm. However, if the alarm is overly sensitive and susceptible to false alarms, the occupiers might be tempted to disable it.

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	60.0
	30.0		30.0		30.0		National Average
Example Dwelling +	20.0					80.0	
National Average	10.0	Example Dwelling	10.0	Example Dwelling + National Average	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	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		
National Average							
Score		Score		Score		Score	
20.0%		10.0%		10.0%		60.0%	

Justification of Scoring

Harm Outcomes

The 'Extreme' and 'Severe' harm outcomes have been raised to reflect the potential level of injury in the event of an explosion.

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 100			
Extreme 20.0%	Severe 10.0%	Serious 10.0%	Moderate 60.0%
Category	Band	Score	
1 Legal duty to take action	High	10,000	
Example Dwelling		2,136	
2 Discretion to take action	Medium	1,000	
	Low	100	
	National Average	21	
Score	2,136		

Scenario 2

After works meeting baseline indicators

Likelihood of Harm 1 in 5,000			
Extreme 10.0%	Severe 0.0%	Serious 10.0%	Moderate 80.0%
Category		Band	Score
1 Legal duty to take action		High	10,000
2 Discretion to take action		Medium	1,000
		Low	100
		Example Dwelling + National Average	21
Score		17	

Justification of Scoring

After works meeting baseline indicators

The hazard score will return to the national average after baseline indicator measures have been met.

A gas safety inspection should reveal that the convector heater in the bedroom does not comply with current gas safety regulations (as a result of the potential for fumes to vent back into the room if the window is open, for example). An alternative method of heating would have to be provided as it would not be economical to relocate the heater and make it compliant with the gas safety regulations.

Scenario 3

After further improvements

Likelihood of Harm			
Extreme	Severe	Serious	Moderate
Category		Band	Score
1 Legal duty to take action		High	10,000
2 Discretion to take action		Medium	1,000
		Low	100
Score			

Installation of a mains-wired heat detector in the kitchen area and a smoke alarm at the entrance to the sleeping area may provide sufficient mitigation to remove the need for an escape window from the bedroom. In any event, were such a window to be installed, it could be rendered inaccessible by furniture or personal items due to the small size of the sleeping area.

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.