

Housing Health and Safety Rating System (HHSRS)

Case Studies

Group D
Psychological
Requirements

Hazard D20
Noise

Example D20.2
Post 1979
Third-floor Flat in
Former Office Block
(HMO)

Vulnerable Group
Persons of all ages

Multiple Locations
Yes

Related Hazard B13
Indoor
Air Pollutants

Related Hazard B14
Excess Heat

Dwelling

Description

This is a flat located in the middle of the third (top) floor of a development, built in 2019, being one of 67 flats on the site of a former office block on the edge of a large industrial estate. This two-bedroomed flat has 75m² floor area, including a large open-plan kitchen and living room with a Juliet balcony overlooking the industrial estate to the rear. No external recreational space has been provided for the development, only a designated car parking space for each flat and 5 bays for visitors.

The flat is highly insulated and its airtight rating is 'good'. The flat has its own gas boiler providing central heating, and the EPC is rating is B. The electrical installation is new. The flats have a stacked layout (living rooms over living rooms, bedrooms over bedrooms, etc.).

Two sides of the development front onto major dual carriageway roads that lead to the nearby national motorway network and a roundabout carrying heavy commuter traffic into the town centre and commercial traffic to the neighbouring industrial estate. Also, in addition to the nearby manufacturing plant on the industrial estate, there is a major international internet seller's distribution centre and another major parcel delivery firm, both operating 24 hours a day, 365 days a year.



1
Site showing flats in the far centre beyond the access road. Photo credit: RebeccaDLev / Shutterstock.com



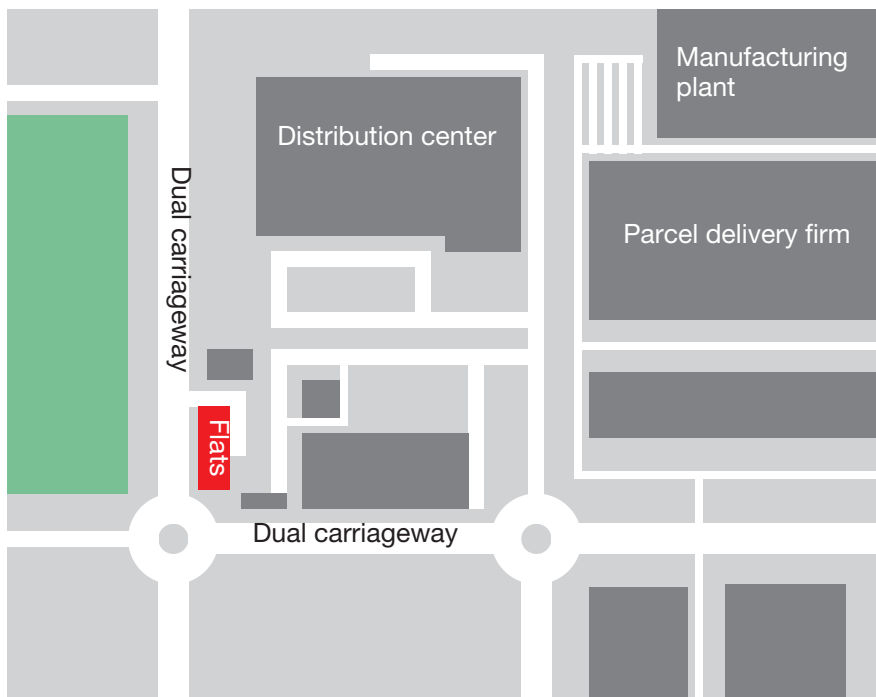
2
View of distribution centre from flat window

Deficiencies

Description

Ventilation is via top-opening windows, the original plans to have sealed windows and mechanical ventilation to reduce traffic and industrial noise having been abandoned. The front of the flat faces south-west so the bedrooms (located at the front) get very hot in the summer, meaning all the windows have to be kept open to get through-ventilation. The bedrooms overlook a busy roundabout.

The sound of heavy goods lorries accelerating and braking as they approach and leave the roundabouts and move round the industrial estate is noticeable. Roller shutter doors can be heard throughout the night. The floors throughout the flat are tiled.



3

Location of the block on the edge of an industrial estate.

Relevant Baseline Indicators

0

Satisfactory or N/A

1

Not Satisfactory

2

Defective

3

Seriously Defective

Subject		Score				BI	Baseline indicators													
10	Noise	0	1	2	3	10.1	All new flats or flat conversions must comply fully with current building regulations in respect of sound insulation. Older flats or flat conversions should comply with all relevant Building Regulations related to noise.													
		0	1	2	3	10.2	The noise level inside the dwelling caused by steady external noise sources must not exceed: <table><tr><th>Time</th><th>Level</th><th>Area</th></tr><tr><td rowspan="3">07:00–23:00</td><td>40dB LAeq T16</td><td>Living Room</td></tr><tr><td>40dB LAeq T16</td><td>Bedroom</td></tr><tr><td>45dB LAeq T16</td><td>Dining Room</td></tr><tr><td>23:00–07:00</td><td>35dB LAeq T8</td><td>Bedroom</td></tr></table>			Time	Level	Area	07:00–23:00	40dB LAeq T16	Living Room	40dB LAeq T16	Bedroom	45dB LAeq T16	Dining Room	23:00–07:00
Time	Level	Area																		
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	40dB LAeq T16	Bedroom																		
	45dB LAeq T16	Dining Room																		
23:00–07:00	35dB LAeq T8	Bedroom																		

Other 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	Siting of dwelling
0	1	2	3	Internal arrangement
0	1	2	3	Floor finishes
0	1	2	3	Repairs
0	1	2	3	Siting of plumbing
0	1	2	3	Equipment
0	1	2	3	Door closers

Score

Matters affecting
Harm Outcomes

0	1	2	3	Siting of dwelling
0	1	2	3	Internal arrangement
0	1	2	3	Floor finishes
0	1	2	3	Repairs
0	1	2	3	Siting of plumbing
0	1	2	3	Equipment
0	1	2	3	Door closers

Likelihood of Harm

Scale Points

Likelihood of harm from this hazard over the next twelve months

Very
Likely

1 in 1

1 in 2

**Example
Dwelling**

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

**National
Average**

1 in 1,000

1 in 2,000

1 in 3,000

1 in 5,000

Score

1 in 3

Justification of Scoring

The flat was built to building regulations standards in respect of sound insulation, and the arrangement of the flats is such that there is very little noise within the building. However, the location of the flat – overlooking busy roads and backing onto an industrial estate with heavy goods vehicle movements 24 hours a day, 365 days a year – means that external noise is an issue. The south-west orientation of the bedrooms means that windows have to be opened to dissipate heat when the weather is warm. This leads to sleep disruption due to noise or excess heat, resulting in adverse effects on mental health and well-being.

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	89.0		
	30.0		30.0		30.0				
	20.0		20.0		20.0				
Likely	10.0	Likely	10.0	Example Dwelling + National Average	10.0	National Average	89.9		
	5.0		5.0		5.0				
	2.0		2.0		2.0				
Unlikely	1.0	Example Dwelling + National Average	1.0	Unlikely	1.0		These scores are simply calculated as the sum of the other three harm outcomes subtracted from 100%		
	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				
Example Dwelling + National Average									
Score		Score		Score				Score	
0.0%		1.0%		10.0%				89.0%	

Justification of Scoring

There is no justification to change the harm outcomes from the national averages.

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 3			
Extreme 0.0%	Severe 1.0%	Serious 10.0%	Moderate 89.0%
Category	Band	Score	
1 Legal duty to take action	High	10,000	
2 Discretion to take action	Example Dwelling	1,630	
	Medium	1,000	
	Low	100	
Score		National Average	5
1,630			

Scenario 2

After works meeting baseline indicators

Likelihood of Harm
1 in 100

Extreme 0.0%	Severe 1.0%	Serious 10.0%	Moderate 89.0%
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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	49
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Score 49	National Average	5
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Scenario 3

After further improvements

Likelihood of Harm
1 in 200

Extreme 0.0%	Severe 1.0%	Serious 10.0%	Moderate 89.0%
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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	24
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Score 24	National Average	5
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Justification of Scoring

After works meeting baseline indicators

To meet the sound levels required by BI 10.2, it is likely that a centralised ventilation and/or air conditioning system would have to be installed to maintain comfortable room temperatures throughout the flat without having to open windows.

Such a system would have to work hard during periods of hot weather to combat solar gain and would inevitably create some background noise. Some external noise such as roller shutter doors being operated may continue to be audible. High background noise levels would still be heard entering and leaving the flat.

Justification of Scoring

After further improvements

The solution should address the associated hazard of Excess Heat as well as those deficiencies related to the Noise hazard. If further measures are required, such as subsequent installation of a mechanical ventilation system (to remove the need for opening windows), then this would reduce the likelihood close to the that of the national average.

Subject to freeholder consent, solar control glass could be fitted to the south-west-facing windows to restrict solar gain from direct sunlight, combined with internal curtains, blinds or shutters.

Other Relevant Legislation and Guidance

Leasehold Properties

In leasehold properties 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).

Party Walls

A party wall agreement may be needed before works can be undertaken to party structures, party walls that form part of a building, or shared garden boundaries.

Dwelling Perspective

When assessing multiple dwellings in the same building, due consideration may need to be given to the level of risk posed to different flats within a building. The likelihood of an occurrence, and harm outcomes resulting from an occurrence, may vary significantly for many hazards, depending on the location of the flat within a building.

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.