



# **HOW TO WRITE AN EFFECTIVE BUILDING SAFETY CASE**

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# SAFETY CASES EXPLAINED

01.

Higher Risk Buildings should be considered as a system of systems, defined as a collection of independent elements that form part of a larger, more complex system. In the context of an HRB, such systems might include; heating, active fire suppression, lifts and cladding. The systems interconnect and much like the systems in the human body (circulatory, nervous) a change to one is likely to impact the functioning of another (or of the system as a whole)

Individual system-level risk assessments cannot be used in isolation to assess overall building safety risks. The safety case approach, as mandated by the Building Safety Act 22, gives Accountable Persons a holistic view of risks in their building.

Whilst there is no absolute definition, it is widely agreed that a building safety case is a structured document used to communicate the argument that building safety risks have been systematically identified and appropriately mitigated, ensuring the building as a whole is safe for occupation.

“

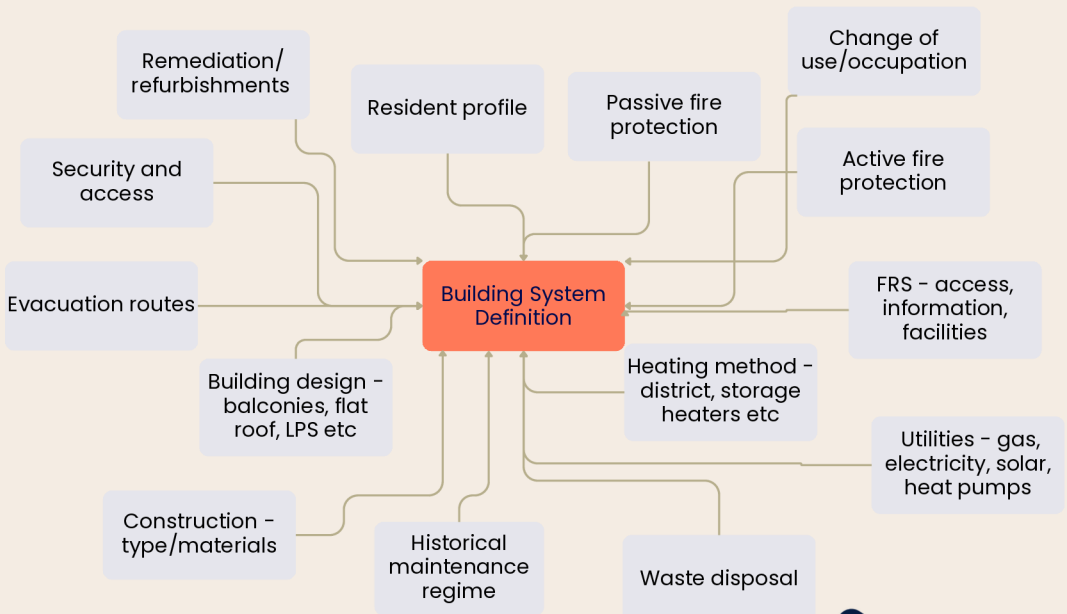
*A safety case should continuously evolve, to give decision makers a clear picture of the safety of the building at any moment, rather than be just a snapshot-in-time report.*

”

# Understand your building

Gain a clear understanding of the building and its residents to inform the scope of the building hazard assessment. Presented as a “system definition”, it draws on Key Building Information as well as broader system elements and interactions.

- a. Resident demographic
- b. HRB surrounding environment
- c. Ownership, accountabilities and management structures
- d. Procedures
- e. Emergency response
- f. Other relevant contextual information



03.

# HAZID

## To manage risk, you first need to know what can go wrong

### CAUSE AND CONSEQUENCE

Based on the system definition, conduct HAZID (both causal and consequence) to identify hazards and associated risks.

### SCENARIO MODELING

Scenario modelling can be used to identify the threats that might lead to a loss of control over the hazard and to a risk materialising.

### BOWTIE

A great method for capturing HAZID is the Bowtie, which will help visualise the possible causes (threats) of an accident and identify credible consequences.

### WHAT HAS CHANGED?

Changes to the building can introduce new risks. Consider what has changed in your building, be it adding another storey, to the addition of solar panels or change of utilities.

### 03.

# HAZID

HAZID is a systematic brainstorming exercise, using guidewords taken from industry lists.

The use of guidewords is to maximise ideas generation and can be phrased as “what-if” questions.

## EXAMPLES

What if the live **load** exceeds the design capacity?

What if the water **pressure** is insufficient?



## STRUCTURAL GUIDEWORDS

Height	Design
Pressure	Flooding
Loads	Wind
Deformation	Freeze/thaw
Vibration	Age
Corrosion	Impact
Modification	Subsidence
Materials	Connections

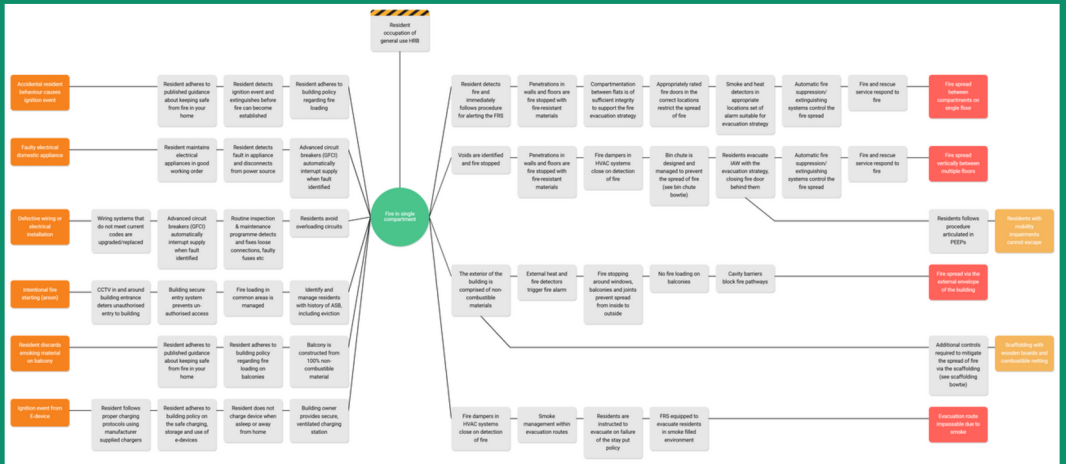
## FIRE-SPREAD GUIDEWORDS

Ignition	Arson
Combustible materials	Detection
Pressure	Suppression
Refuse	Utilities
Remediation	Cladding
Smoke	Balconies
Ventilation	Maintenance
	Compartments

Each guideword triggers a different consideration of the scenario, condition or situation and leads to identification of the worst reasonably foreseeable consequence. The hazard is explored to determine whether suitable safety controls are available and effective. What-if HAZID increases understanding of the building, and is the first part of demonstrating all reasonable steps.

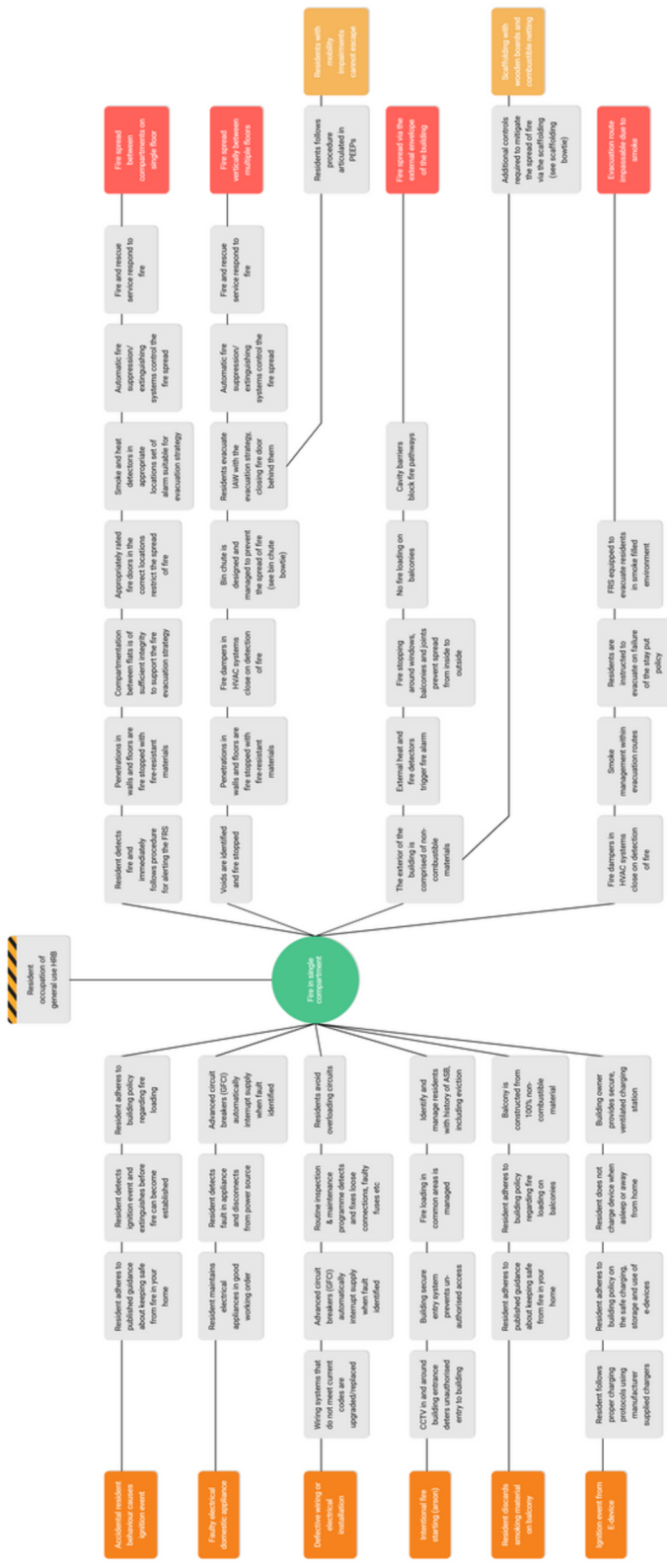
# EXAMPLE WHAT-IF HAZID

What if? based on guidewords	What could happen?	Worst reasonably foreseeable outcome	Existing controls	Actions
What if structural materials of the building are not adequately protected from environmental hazards?	Rainwater penetration leading to corrosion, spalling and other forms of structural damage over time.	Load bearing capacity reduced to the point of loss of structural integrity of the building.	<ul style="list-style-type: none"> <li>• Membranes, barriers and surface treatments prevent water ingress</li> <li>• Adequate drainage minimises water exposure</li> </ul>	<ul style="list-style-type: none"> <li>• Consider crack and spall mapping.</li> <li>• Core sample test</li> </ul>
What if the sprinkler system in the HRB fails?	Fire is not controlled or extinguished in compartment of origin.	Fire and/or smoke spread throughout building, potentially rendering simultaneous evacuation impossible.	<ul style="list-style-type: none"> <li>• Intermediate booster pumps and gravity-fed systems ensure sufficient pressure.</li> <li>• Regular maintenance and testing of the sprinkler system</li> </ul>	<ul style="list-style-type: none"> <li>• Confirm power backup for pumps and control systems to ensure functionality during power outages.</li> </ul>
What if large numbers of residents ignore the stay put advice during a fire?	Block stairwell and impede FRS access	FRS cannot gain access to the fire floor	<ul style="list-style-type: none"> <li>• The stay-put policy is communicated to residents, including actions to take and when to leave the flat.</li> </ul>	<ul style="list-style-type: none"> <li>• Strategies to improve resident engagement</li> <li>• Staircase-evacuation modeling</li> </ul>
What if the access route for FRS to the building is impeded/blocked when called out to deal with a fire?	Response to fire is delayed and burns for longer than fire rating of compartment	Fire spreads beyond compartment of origin	<ul style="list-style-type: none"> <li>• Defined route for fire service IAW ADB</li> </ul>	<ul style="list-style-type: none"> <li>• Implement parking restrictions in areas where appliances need to gain access</li> </ul>



# RESULTS OF HAZID DISPLAYED IN A BOWTIE

The bowtie diagram offers an understanding of the extent to which the risk in question is being controlled. Whilst a bowtie cannot predict the next incident, used well it can highlight weaknesses in the control framework as well as critical controls that you are heavily reliant upon. This helps identify where to focus resources: is a new control needed; does an existing control need to be improved; or does an effective control need to be monitored more closely?



04.

# LINKING THE RISK ASSESSMENT TO THE SAFETY CASE

## ALL REASONABLE STEPS

Part 4 of the Building Safety Act 22 requires the PAP to produce a safety case demonstrating that building safety risks (the spread of fire and structural failure) have been identified, assessed and mitigated.

The HAZID output is linked to the safety case by forming the basis of the safety claims, to demonstrate that all reasonable steps have been taken to manage building safety risk.

## EXAMPLE

In the above HAZID we asked “What if structural materials of the building are not adequately protected from environmental hazards?”

### SUB-CLAIM

On going integrity of structural materials is assured.

### ARGUMENTS

- Membranes, barriers and surface treatments are sufficient to protect the building from environmental hazards.
- Permeability and porosity of the concrete elements of the structure are both low.

### EVIDENCE

- Ongoing maintenance (evidence of)
- Recent inspection report
- Permeability and porosity test results
- Crack and spall map



05.

# THE SAFETY CASE STRUCTURE

The safety case is a series of structured claims and arguments, supported by evidence, to substantiate the overall objective.

## OBJECTIVE

Objective: All reasonable steps have been taken to prevent an incident involving building safety risks occurring at the HRB, and to limit the consequences should one happen.

## CLAIMS

**01.**

All reasonable steps have been taken to manage the risks associated with structural failure.

**02.**

All reasonable steps have been taken to manage the risks associated with the spread of fire

**03.**

Risks related to structural failure and the spread of fire are managed effectively via the SMS.

## SUB-CLAIMS

Each claim is divided into a series of sub-claims. Each sub-claim is substantiated by arguments and evidence. Sub-claim examples relating to the spread of fire might be:

The causes of fire have been understood and mitigated.

Compartmentation is of sufficient integrity to support the stay-put fire evacuation strategy.

In the event of an evacuation residents can leave via a safe, protected route.

# ARGUMENTS

because...

**01.**

Compartmentation remains effective over time through proper maintenance and testing

**02.**

Compartmentation remains intact during the design fire scenarios, ensuring no premature breach

**03.**

Compartmentation effectively limits fire and smoke spread, maintaining tenable conditions for unaffected compartments

**EXAMPLE**

## EVIDENCE

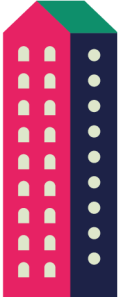
Records of routine inspections of compartmentation elements, such as fire doors, seals and barriers

Modeling report showing materials under fire conditions. Evidence of fire stopping in voids, joints, penetrations etc.

Documents that demonstrate compliance with standards. Evidence of fire-rated materials used.

If evidence is missing and an argument cannot be substantiated, an action plan must be initiated to gather it - this may involve remedial works. In some cases, interim mitigations should be established to control the risk while the action is ongoing.

# Report Example



Cambridge House  
Grosvenor Street  
Newtown  
NT1 3CR  
Registration no. 123456



## Introduction

Cambridge Towers is a 12-story residential building located on a quiet residential street in the heart of Newtown.

This safety case outlines the measures in place to manage risks, maintain safety and ensure compliance with current safety regulations, prioritising the well-being of all residents.

## Relevant persons

- The Principal Accountable Person
- Other Accountable Persons
- The responsible persons(s) under the FSO (Regulatory Reform (Fire Safety) Order 2005) where different
- Details of all parties involved with producing the Safety Case (and their competencies)

## Building description

Height: 37m  
Storeys: 12  
No. of dwellings: 48  
External wall system  
Other relevant details

# Risk assessment and control measures

Include a description of the risk assessment and ongoing management processes, including how HAZID was conducted and by whom (state their competencies). Give a precis of key findings.

An argument will only be robust if it is structured in a logical form, allowing stakeholders to understand and critique it. The aggregation of the claims, arguments and evidence will serve to demonstrate that all reasonable steps have been taken to manage each risk identified.

<b>Objective:</b> All reasonable steps have been taken to prevent an incident involving building safety risks occurring at the HRB, and to limit the consequences should one happen.	
<b>Claim 1:</b> The building is acceptably resistant to the spread of fire and occupants will be afforded sufficient protection from any fires until they can be evacuated or the fire extinguished	
<b>Sub-claim 1.1:</b> Compartmentation is of sufficient integrity to support a stay-put fire evacuation strategy	
Argument	Evidence
The building is equipped with fire-resistant walls, floors and ceilings that meet or exceed regulatory standards	Documentation from accredited testing agencies that verifies the fire-resistance rating of materials used. <a href="#">Link</a>
Fire-rated doors are installed throughout the building, which automatically close to prevent the spread of smoke and fire to other areas	Records showing that fire doors are properly installed Evidence of fire-door ratings Evidence of regular checking
The building undergoes regular inspections and maintenance to ensure that compartmentation remains in an optimal condition	<a href="#">Compartmentation survey report</a> Evidence of regular compartmentation inspections

## **Action Plans**

Describe the action plan for each area of the safety case where an argument cannot be substantiated or a defect or discrepancy has been identified. In the above case, a compartmentation survey is needed. Describe interim mitigations.

## **Safety Management System**

Description of the SMS explaining the structure (e.g. PCDO) and key headings:

- Roles and responsibilities of key personnel
- Competency of key personnel
- Risk Management process
- Training and awareness
- Continuous improvement
- Management of change
- Performance monitoring
- Corrective and preventative actions
- Documentation and record keeping

It may be advisable to include the entire SMS document as an annex.

## **Emergency arrangements**

Ensure arrangements are specific to the building

## **Resident engagement strategy**

The resident engagement strategy should relate to the residents within this building as well as details of the organisation wide strategy.

## **Incident reporting procedure**

## **Summary**

# 5 REASONS TO GO DIGITAL

- 01. Transform Data into a Business Asset**  
Leverage insights from your safety case data to drive smarter decisions
- 02. Consistency You Can Trust**  
Ensure all safety cases follow a standardised format, reducing errors and ensuring compliance every time.
- 03. Work smarter, not harder**  
Streamline updates and reviews with built-in tools, cutting down manual work and accelerating delivery.
- 04. Action plan tracking**  
Create and manage action plans for safety initiatives, remediations and interim mitigations.
- 05. Scalability**  
Centralise, organise and access all your safety cases in one platform – say goodbye to version control chaos!

“ Many are stubborn in pursuit of the path they have chosen, few in pursuit of the goal



# Courses

E-learning | Face to face | In-house

## Building Safety for Practitioners 2 days

1. Identify, assess and manage building safety risks
2. Conduct a HAZID using the What-If technique
3. Create and use the Bowtie risk model
4. Apply the concept of 'all reasonable steps'
5. Develop an outline safety case

## Building Safety 101 1 day

1. Explore Part 4 of the Building Safety Act 22
2. Define the concepts of risk, proportionality & all reasonable steps
3. Describe the steps of the Risk Management Cycle and apply them in practice

## Bowties in Building Safety 1 day

1. Learn the key terminology and concepts of Bowtie methodology to effectively communicate risk
2. Master the rules for effective Bowtie creation
3. Hands-on workshop: Build a Bowtie from scratch
4. Analyse and manage Barriers
5. Interpret likelihood and severity
6. Apply Bowtie to everyday building safety situations
7. Incorporate Bowties into your building safety case

We also offer courses in SMS and  
workshop facilitation

# ADDRESSING YOUR DOUBTS

## **This feels like a bureaucratic approach**

The safety case isn't about paperwork for its own sake; it's a tool to ensure critical safety elements are planned, executed and maintained effectively. Far from creating unnecessary complexity, it streamlines safety management by identifying gaps and focusing resources where they're needed most.

## **We've been fine without a digital solution – why now?**

Systems evolve and risks can emerge or grow unnoticed without structured oversight. A digital safety case ensures risks are identified and mitigated proactively, reducing reliance on good people being lucky.

## **What about the cost?**

The cost of implementing a digital safety case is minor compared to the financial and reputational consequences of a major incident. Fires, accidents or system failures lead to lawsuits, fines and repair costs that far exceed preventive investments. It's an example of the old adage: You think safety is expensive? Wait until you have an accident!

## **How do we know it's effective?**

A safety case is built on measurable data, expert analysis and regular testing, not vague assurances. It provides clear evidence that safety measures are effective and risks are being managed. This approach builds trust with stakeholders and improves transparency and accountability.



# CASCADE RISK MANAGEMENT LTD

The examples provided in this guide are for illustrative purposes only and are intended solely to demonstrate the structure and format of a safety case report. They must not be interpreted as recommended content or relied upon as suitable for specific applications

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