

# The impact of Grenfell on Frankfurt Fire Service



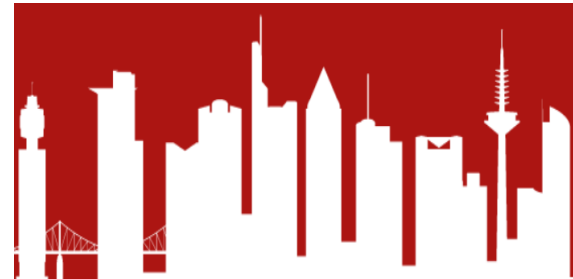
# Frankfurt // in Numbers



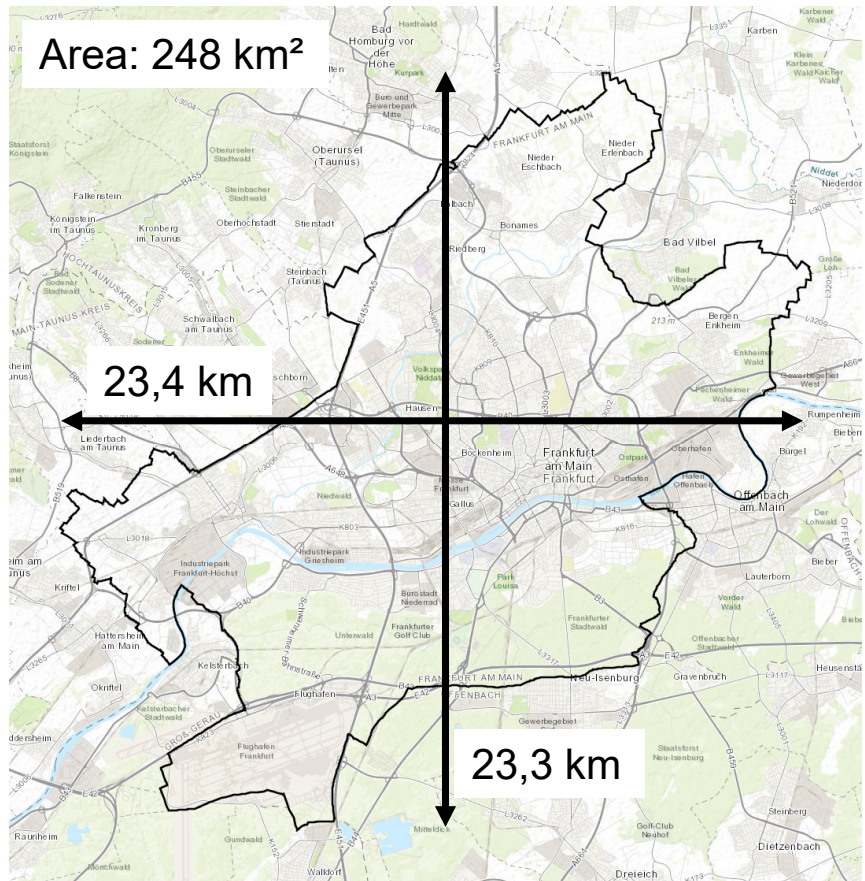
770.000 Inhabitants



390.000 Commuters



over 600 skyscraper



Size of the city

# Fire and Rescue Service



**BRANDBE-  
KÄMPFUNG**  
// FIREFIGHTING



**RETTUNG BEI  
UNFÄLLEN**  
// HEAVY RESCUE



**EINSATZLEITUNG**  
// INCIDENT  
COMMAND



**RETTUNGSDIENST**  
// EMERGENCY  
MEDICAL SERVICE



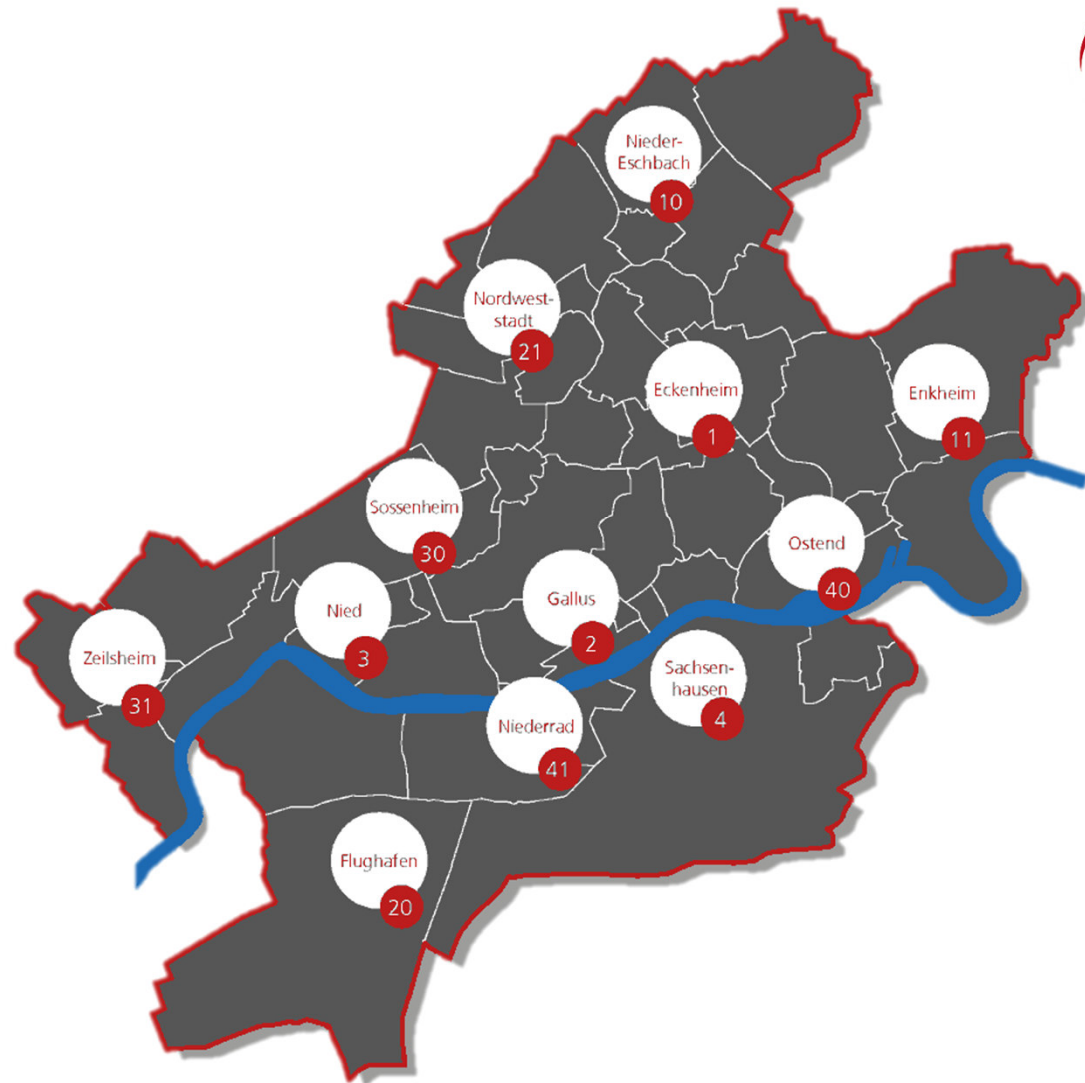
**LUFTRETTUNG**  
// HELICOPTER  
EMERGENCY  
MEDICAL SERVICE

# Frankfurt Fire Service

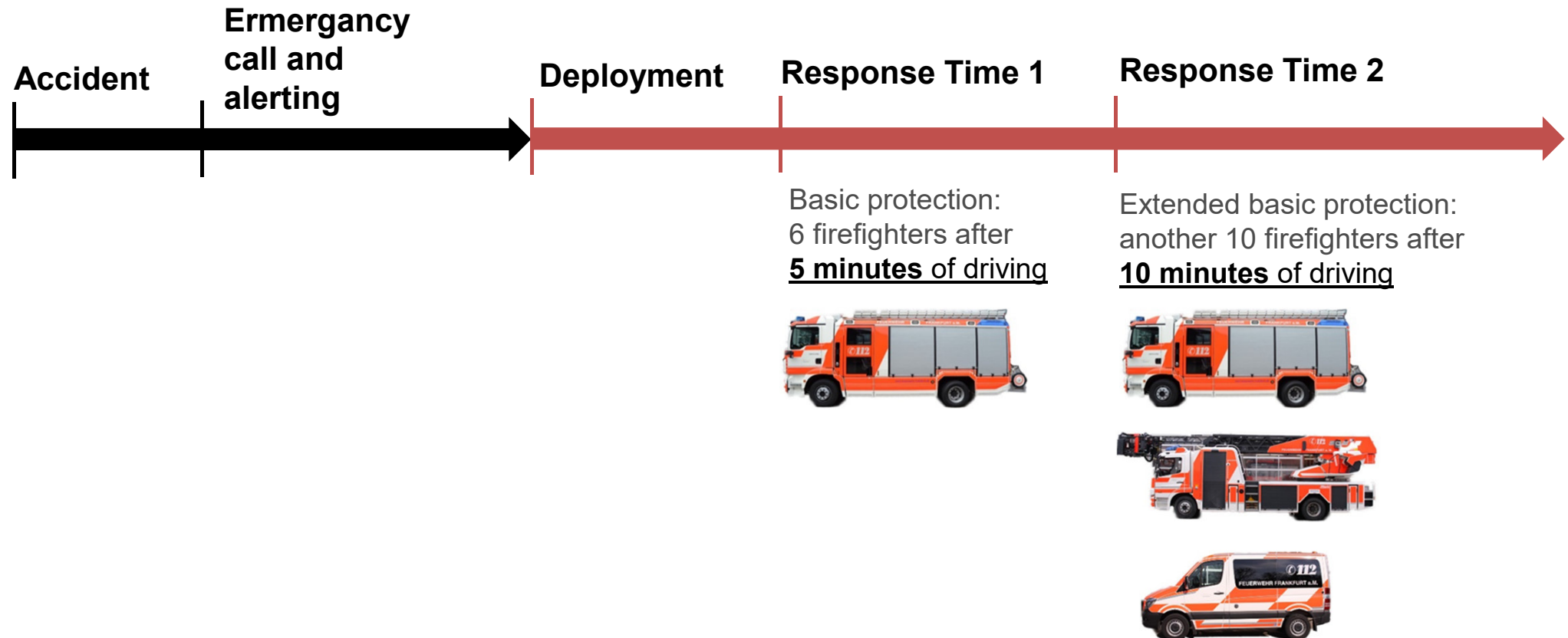
1000 professional firefighters at  
12 fire stations

151 firefighters on duty around  
the clock

900 volunteer firefighters in  
28 volunteer fire brigades



# Demensioning of the fire department



## First fire of a skyscraper in Germany - Selmi skyscraper

- first skyscraper in Germany
- built between 1971-1974
- height: 142 m
- office space: 45.000 m<sup>2</sup>

The Selmi tower was the tallest building of this kind at the time in Europe.



## Selmi skyscraper fire

- On 22 August 1973 the high-rise was still under construction.
- At 10pm a fire broke out on the 39<sup>th</sup> floor.
- The first forces arrived within minutes.
- Firefighting was initially not possible due to the construction work:
  - the lighting failed during fire
  - fire doors were open
  - the riser was not yet ready for use
  - the pumps for the wet standpipe had been removed shortly before the fire
- A state of emergency was declared at 22:30.
- At 11 p.m. the general alarm was triggered for the off-duty forces.
- The burning skyscraper attracted crowds of onlookers.



## Selmi skyscraper fire

- Six upper floors were completely engulfed in flames.
- The fire spread to the surrounding area due to falling objects.
- Three portable pumps were placed in the tower block by firefighters.
- Firefighting was initiated with 12 fire nozzles.
- The surrounding area was protected with additional fire nozzles.





## Selmi skyscraper fire – conclusion

- The fire was extinguished at 6:20 a.m.
  - 8 hours of firefighting
  - 200 firefighters
  - 58 fire nozzles
- The top six floors were destroyed.
- The damage was about six million deutschmarks:
  - 11,6 million € adjusted for inflation
  - converted into pounds: 9,8 million £
- There was a lack of experience in high-rise firefighting.



## Selmi skyscraper fire – consequences

- Many insights were gained that influenced building law. For Example:
  - the stairwell must be safe to use during the construction period
  - a wet riser must be usable up to the penultimate floor
- The Frankfurt fire chief, Ernst Achilles, becomes the nimbus of “high-rise fire expert” in Germany.



# Prevention



**EINSATZKONZEPTE**  
// OPERATIONAL  
CONCEPTS

**BERATUNG  
VORBEUGENDER  
BRANDSCHUTZ**  
// PREVENTIVE FIRE  
PROTECTION CONSULTING

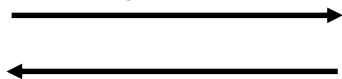
**VERANSTALTUNGS-  
SICHERHEIT**  
// EVENT SAFETY  
AND SECURITY

# Application for planning permission



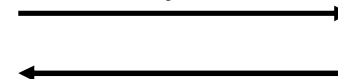
builder

application for  
planning permission



local planning authority

fire protection  
concept

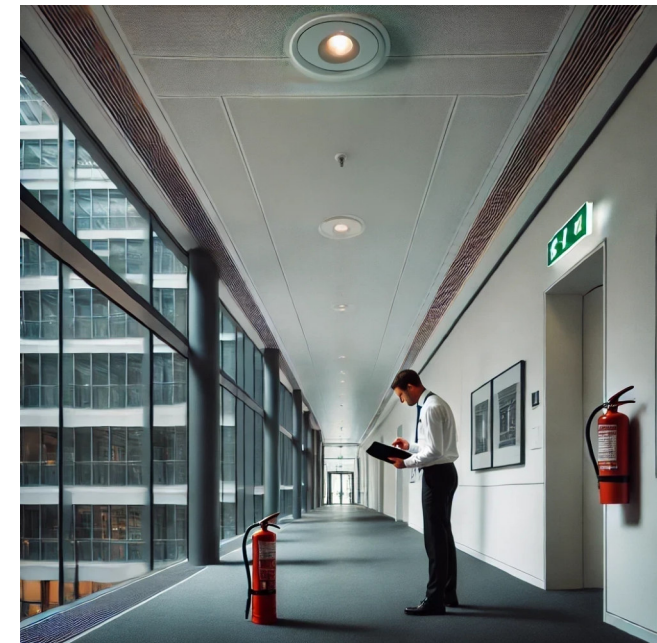


Frankfurt fire department

# Fire prevention inspection

## The fire prevention inspection

- is carried out by the local fire department
- must be conducted regularly (typically every five years)
- covers structural, technical, organizational and operational fire protection measures, including
  - compliance with fire safety regulations
  - functionality of fire alarm systems and fire-fighting equipment
  - proper signage and accessibility of escape and rescue routes
- If deficiencies are found, a deadline is set for rectifying them.
- The costs for carrying out the fire prevention inspection are generally borne by the owner.



# Tasks of the building inspectorate

- If there are structural defects, the building inspectorate is responsible.
- The building inspectorate checks that the building complies with the building permit.
- The authority carries out regular inspections.
- If there are major deficiencies, use may be prohibited.
  - e.g. Messeturm 2020:
    - The emergency escape routes were blocked by a building site.
    - The tower was evacuated due to safety concerns.
    - A new escape route has been set up.
    - After five days the tower could be used again.

**“Messeturm closed due to safety deficiencies”**

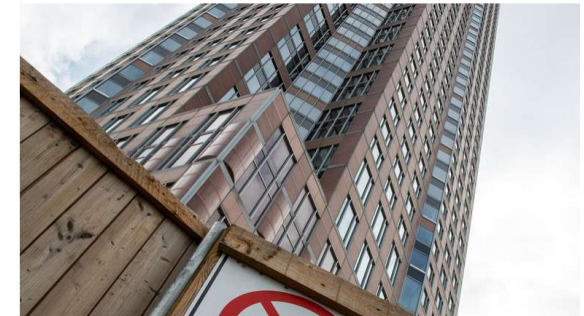


## Messeturm wegen Sicherheitsmängeln gesperrt

17.09.2020, 19:25 Uhr  
Von: Oliver Teutsch

Kommentare

Drucken



Probleme mit den Fluchtwegen: Der Messeturm ist gesperrt. © ROLF OESER

*Weil Fluchtwege versperrt sind, können Hunderte Menschen vorerst nicht an ihre Arbeitsplätze zurückkehren. Wie lange der Turm gesperrt bleibt, ist offen.*

## The day of grenfell fire...

busiest day in our fire prevention service...

... there were so many inquiries from the press and concerned citizens

**And the question was: Can this also happen in Frankfurt?**

# Overview of the building regulations

## high-rise building authorised before 1984:

- combustible materials may be installed in the exterior wall area



## high-rise building authorised since 1984:

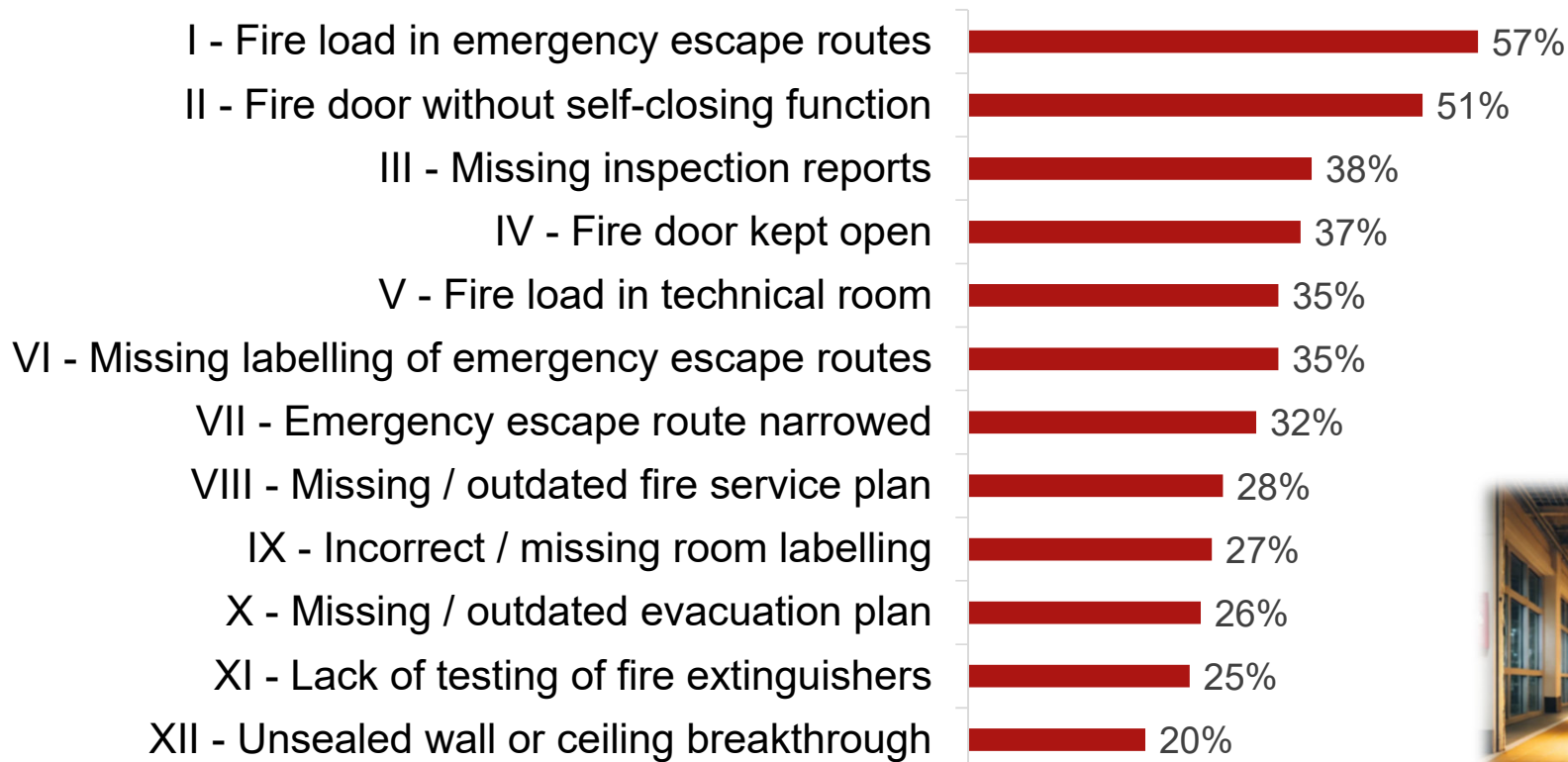
- cladding and insulation materials on facades must be non-combustible

High-rise buildings are buildings with at least one floor 22 metres above ground level.

Buildings built before 1984 do not automatically have to be adapted to the new regulations. However, if changes are made to the building, the new regulations must be complied with.



# Top frequent deficiencies in in high-rise buildings



In xx % of the high-rise buildings that had several deficiencies, the named deficiency occurred.

# Perceptions of preventive fire protection among the public

Before the Grenfell Tower fire:

**“Fire protection for BER costs 300 million euros**

The fire protection systems at the new airport in Schönefeld may not work, but they are already as expensive as entire terminals elsewhere.”



“Hotels are being closed, homeowners have to pay thousands of euros - the standards for fire protection are getting higher and higher... Sure, you don't cut corners when it comes to safety! But is that the only issue? No, says the fire brigade of all people... It's also about money. Fire protection is a billion-euro business...”



# Perceptions of preventive fire protection among the public

Before the Grenfell Tower fire:

“Fire protection becomes an election campaign issue”



Brandschutz wird zum Wahlkampf-Thema

Christoph Grabenheinrich

19.01.2017 | 06:47 Uhr

“You have to have the courage to roll back fire protection regulations...The costs in building construction have also risen because of this...”

Politik & Wirtschaft

[Architektenkammer will Brandschutz diskutieren](#)

Fast alle Parteien haben sich bei der Podiumsdiskussion „Das Saarland vor der Wahl“ bei der IHK Saarland dafür ausgesprochen, die geltenden Brandschutzbestimmungen zu überdenken. Lob kommt von der Architektenkammer des Saarlandes. Die fordert einen konstruktiven Dialog.

AUCH OPPOSITION WILL REGELN ÜBERDENKEN

Der Spitzenkandidat der Linken, Oskar Lafontaine, fordert die Einrichtung einer saarländischen Brandschutzkonferenz. FDP-Kandidat Oliver Luksic will eine Änderung der Landesbauordnung. Grünen-Chef Hubert Ulrich hält Änderungen auch für nötig, warnt aber: Das Problem sei auch darin begründet, dass in den unteren Bauaufsichtsbehörden teils zu wenig Kompetenz vorhanden sei. Deswegen würden Regeln überzogen ausgelegt.



Audio [19.01.2017, Länge: 3.09 Min.]  
SR 3 - Alle Spitze? Die saarländischen Spitzenkandidaten in der IHK

Über dieses Thema wurde auch in den Hörfunknachrichten vom 19.01.2017 berichtet.

“The problem is also due to the fact that some of local planning authorities have too little expertise. As a result, rules are interpreted excessively.”

# The effects of the Grenfell Tower fire

## Hessian Ministry of Economics:

- Economics Minister Tarek Al-Wazir highlighted the high safety standards in high-rise buildings in Hesse.
- However, considering the devastating fire in the UK, he advocated for increased inspections, especially for older buildings.
- He stressed that all high-rises built before 1984 should undergo additional checks for potential fire hazards to ensure their safety.

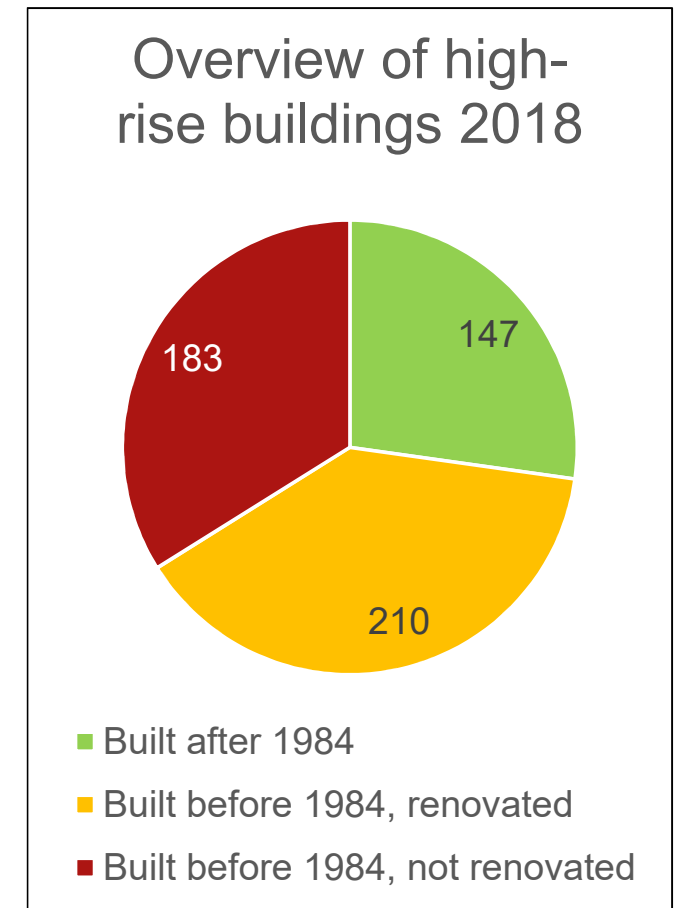
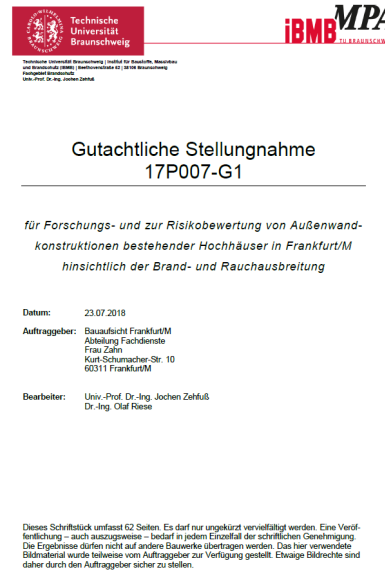
**“High level of safety in Hessian high-rise buildings”**



# The effects of the Grenfell Tower fire

## Examination of the facades of all high-rise buildings in Frankfurt

- 183 high-rise buildings were built before 1984 and have not yet been renovated.
- The use of combustible insulation is possible in these buildings.
- A risk analysis was carried out in 2018:
  - the buildings could be categorised into six different groups based on the construction of the external walls
  - the groups were analysed with regard to the risk of fire and smoke spreading



# The effects of the Grenfell Tower fire

Examination of the facades of all high-rise buildings in Frankfurt

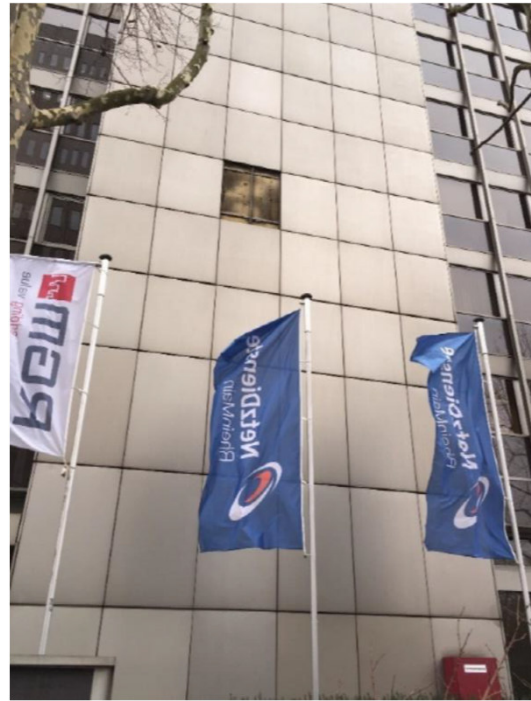
Results:

Group	Description (construction details)		Recommended actions
1	External wall systems designed without rear ventilation with precast concrete system elements	x	Structural / plant engineering measures
2	Exterior walls made of masonry or concrete with rear ventilation and concrete facing formwork	x	Structural / plant engineering measures
3	Exterior walls with wood wool panels	✓	No measures
4	Façade structure masonry, insulation and facing shell without prefabricated subsystems	(✓)	(Not analysed)
5	Reinforced concrete skeleton with wooden sandwich elements	x	Structural / organisational measures
6	Sheet metal elements with bitumen coating	x	Structural measures

## The effects of the Grenfell Tower fire



*Connection of wooden sandwich element to window in the plinth area*



*Exterior wall with sheet metal panelling*

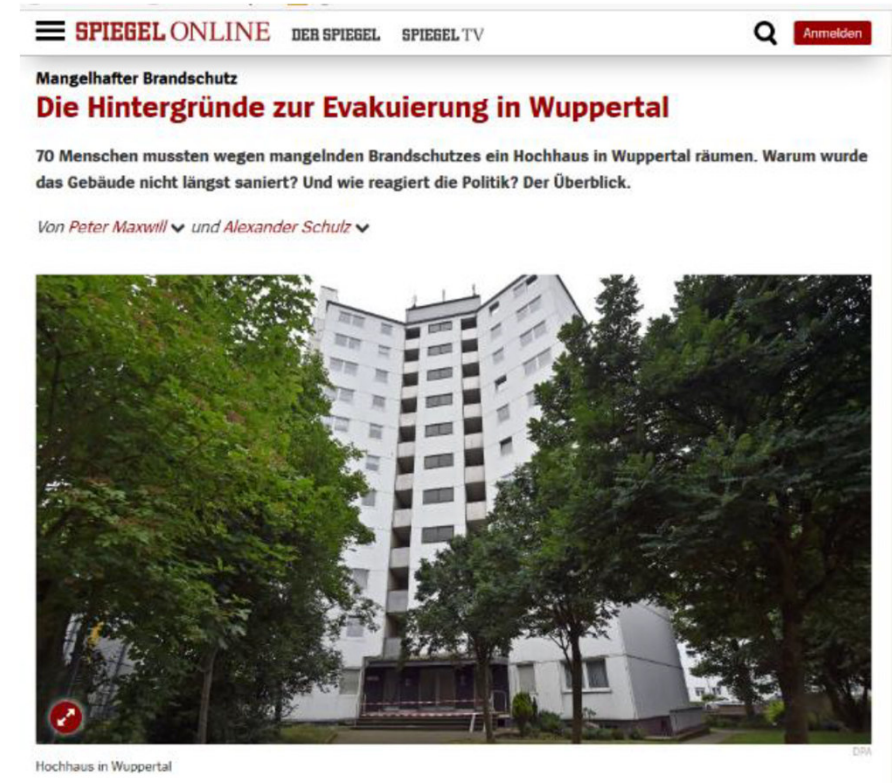


*Bitumen sheeting on the back of the sheet metal panelling*

# The effects of the Grenfell Tower fire

## Clearing of tower blocks in Wuppertal:

- 70 people had to evacuate a tower block due to inadequate fire protection.
- Wood wool was used as insulating material.
- The problem had been known since 2010.
- Due to changes in ownership, it was not legally possible for the city to impose high fines.
- The fines imposed were significantly lower than the impending renovation costs.





# The effects of the Grenfell Tower fire

## Floor in residential building cleared

- The building authorities conducted an inspection after receiving hints from the public.
- They found that the eighth floor of the building is occupied. The floor exceeded the height limit of 22 meters for residential use.
- While storage rooms were permitted, the owner had no approval for residential use.
- The authorities prohibited any further use of these rooms.

Wegen Brandschutz-Risiken

### Stockwerk in Offenbacher Wohnhaus geräumt

Veröffentlicht am 30.06.17 um 19:31 Uhr



Die oberste Etage des Hauses am Offenbacher Odenwaldring. Bild © Tobias Läßben (hr-INFO)

Nach der Katastrophe beim Brand des Londoner Hochhauses sind auch hessische Behörden alarmiert: In Offenbach wurde bei der Kontrolle eines Hauses das oberste Stockwerk geräumt - auch wegen möglicher Risiken beim Brandschutz.

# The effects of the Grenfell Tower fire

## Facade must be removed in Heusenstamm

- The building authorities found a building that had been newly insulated with polystyrene.
- To ensure safety, the facade was monitored around the clock by security guards.
- Grilling and smoking on balconies was prohibited.
- The owner had to remove the combustibile insulation from the ground floor within two weeks and the rest of the facade within two months.

Konsequenzen aus Hochhausbrand

### Sicherheitsleute passen auf: Zigarette auf Balkon ist Risiko

Aktualisiert am 14.07.17 um 17:53 Uhr



Ein Mitarbeiter eines Sicherheitsdienstleisters steht in einem Treppenhaus. Bild © picture-alliance/dpa

Nach der Brandkatastrophe von London überprüfen die hessischen Kommunen den Brandschutz in Hochhäusern. In Hanau und im Landkreis Offenbach entdeckte man Probleme - und fand kreative Lösungswege.

ORTE

• Dietzenb.

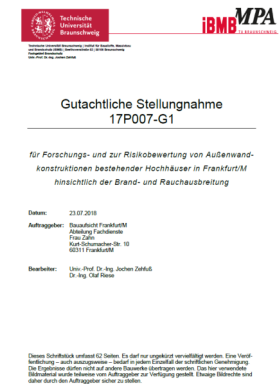
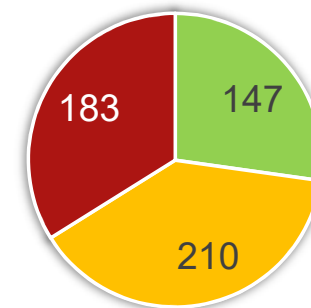
• Hanau

• Heusenst.

# The effects of the Grenfell Tower fire

## Conclusion

- Change in the public perception of preventive fire protection (at least in the short term).
- Clearance of buildings (in some cases where defects have been known for years).
- Examination of all facades of high-rise buildings in Frankfurt.
- Structural changes to facades with a high risk of fire spreading.



# Training in operational concepts



We place even greater emphasis on training in high-rise buildings...

...and teach operational concepts to all colleagues



Thank you very much for your attention.

