

FIRE SAFETY ISSUES IN THE DESIGN AND RETROFIT IN EXISTING HIGH RISE BUILDINGS

INTRODUCTION

HIGH RISE BUILDINGS – DEFINED OVER EIGHT FLOORS ARE CRITICAL TO MODERN URBAN INFRASTRUCTURE. THEY HOUSE A LARGE NUMBER OF OCCUPANTS AND PRESENT UNIQUE FIRE SAFETY CHALLENGES DUE TO THEIR HEIGHT AND DENSITY

WHILE NEW BUILDINGS BENEFIT FROM UPDATED FIRE SAFETY CODES, MANY OLDER BUILDINGS, CONSTRUCTED BEFORE MODERN REGULATIONS, LACK THE NECESSARY INFRASTRUCTURE TO PREVENT AND MITIGATE FIRES.

LITERATURE REVIEW

EARLY STUDIES FOCUSED ON PASSIVE PROTECTION: COMPARTMENTATION AND FIRE-RESISTANT MATERIALS. MODERN RESEARCH HAS SHIFTED TOWARD INTEGRATED SYSTEMS INCLUDING ALARMS, SPRINKLERS, AND EVACUATION PROTOCOLS.

HOWEVER, A GAP REMAINS IN PRACTICAL GUIDANCE FOR RETROFITTING OLDER BUILDINGS. MANY RESEARCHERS HIGHLIGHT THAT WHILE TECHNOLOGY HAS EVOLVED, REGULATORY FRAMEWORKS HAVE NOT KEPT PACE. THERE IS ALSO MINIMAL LITERATURE ON THE COST-BENEFIT ANALYSIS AND FEASIBILITY OF RETROFITTING FIRE SAFETY INFRASTRUCTURE IN OCCUPIED HIGH-RISE BUILDINGS.

EXPECTED OUTCOMES

EXPECTED RESULTS INCLUDE:

- A CLEARER UNDERSTANDING OF OUTDATED FIRE SAFETY ELEMENTS IN OLDER HIGH-RISES
- DOCUMENTATION OF THE CHALLENGES AND BARRIERS TO RETROFITTING
- INSIGHTS INTO BEST PRACTICES FOR INTEGRATING MODERN SYSTEMS
- POLICY RECOMMENDATIONS TO HELP REGULATORS ENFORCE FIRE SAFETY STANDARDS



CONCLUSION

BY IDENTIFYING THE CORE ISSUES IN BOTH DESIGN AND RETROFIT PHASES, THIS RESEARCH AIMS TO CONTRIBUTE ACTIONABLE INSIGHTS THAT CAN LEAD TO IMPROVED SAFETY IN HIGH-RISE BUILDINGS. ULTIMATELY, THE FINDINGS ARE EXPECTED TO INFORM FUTURE POLICIES, ENCOURAGE PROACTIVE RETROFITTING, AND PROMOTE INTEGRATED FIRE SAFETY PLANNING.

RESEARCH DESIGN AND METHODOLOGY

THE STUDY ADOPTS A MIXED-METHODS APPROACH:

- SURVEYS (QUANTITATIVE) WILL BE DISTRIBUTED TO BUILDING MANAGERS AND OCCUPANTS TO ASSESS CURRENT FIRE SAFETY PERCEPTIONS.
- SEMI-STRUCTURED INTERVIEWS (QUALITATIVE) WILL CAPTURE THE INSIGHTS OF ARCHITECTS, ENGINEERS, AND FIRE SAFETY EXPERTS.

SAMPLING:

- RANDOM SAMPLING FOR SURVEYS ENSURES DIVERSE INPUT FROM BOTH RETROFITTED AND CONVENTIONAL BUILDINGS.
- PURPOSEIVE SAMPLING FOR EXPERT INTERVIEWS ENSURES IN-DEPTH, INFORMED RESPONSES FROM THOSE WITH RELEVANT EXPERIENCE.

ANALYSIS:

- SURVEY DATA WILL BE ANALYZED STATISTICALLY (E.G., ANOVA) USING SPSS.



TIMELINE

THE RESEARCH PROJECT SPANS NINE MONTHS:

- MONTH 1 – CONDUCT LITERATURE REVIEW
- MONTH 2 – DESIGN SURVEYS/ INTERVIEW TOOLS
- MONTH 3 – 4 – CONDUCT INTERVIEWS
- MONTH 4 – 5 – PERFORM CASE STUDIES
- MONTH 6 – 7 – ANALYZE DATA
- MONTH 8 – WRITE RESEARCH REPORT
- MONTH 9 – FINAL EDITS, REVIEW AND SUBMISSION



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REFERENCES

ADMIN (2024) RETROFITTING FOR MODERN FIRE SAFETY STANDARDS – [HTTPS://AWH.CO.UK/2024/09/20/RETROFITTING-FOR-MODERN-FIRE-SAFETY-STANDARDS/](https://awh.co.uk/2024/09/20/retrofitting-for-modern-fire-safety-standards/)

JONATHAN GOBY (2024) FIRE SAFETY IN HIGH-RISE BUILDINGS: REGULATIONS TO KNOW – [HTTPS://HUMANFOCUS.CO.UK/BLOG/FIRE-SAFETY-IN-HIGH-RISE-BUILDINGS-REGULATIONS-TO-KNOW/#:~:TEXT=HIGH-RISE%20RESIDENTIAL%20BUILDINGS%20MUST%20MEET%20STRICTER%20FIRE%20SAFETY,2022%2C%20NOW%20GOVERN%20FIRE%20SAFETY%20IN%20HIGH-RISE%20BUILDINGS](https://humanfocus.co.uk/blog/fire-safety-in-high-rise-buildings-regulations-to-know/#:~:text=HIGH-RISE%20RESIDENTIAL%20BUILDINGS%20MUST%20MEET%20STRICTER%20FIRE%20SAFETY,2022%2C%20NOW%20GOVERN%20FIRE%20SAFETY%20IN%20HIGH-RISE%20BUILDINGS)

SCOTT FOWLER (2024) UPGRADING FIRE SAFETY IN OLDER BUILDINGS: CHALLENGES AND SOLUTIONS – [HTTPS://WWW.PYROACTIVE.CO.UK/POST/UPGRADING-FIRE-SAFETY-IN-OLDER-BUILDINGS-CHALLENGES-AND-SOLUTIONS](https://www.pyroactive.co.uk/post/upgrading-fire-safety-in-older-buildings-challenges-and-solutions)

ESME DEE (2022) A GUIDE TO FIRE RESISTANT MATERIALS – [HTTPS://WWW.FIRESEALSDIRECT.CO.UK/ADVICE-CENTRE/A-GUIDE-TO-FIRE-RESISTANT-MATERIALS/](https://www.firesealsdirect.co.uk/advice-centre/a-guide-to-fire-resistant-materials/)

FIRE (2024) THE LATEST ADVANCEMENTS IN FIRE DETECTION TECHNOLOGY – [HTTPS://RESOURCES.IMPACTFIRESERVICES.COM/FIRE-DETECTION-TECHNOLOGY-ADVANCEMENTS](https://resources.impactfireservices.com/fire-detection-technology-advancements)

GOV.UK (2024) MANAGING SAFETY RISKS IN HIGH RISE RESIDENTIAL BUILDINGS – [HTTPS://WWW.GOV.UK/GOVERNMENT/PUBLICATIONS/BUILDING-SAFETY-GUIDES-FOR-ACCOUNTABLE-PERSONS/MANAGING-SAFETY-RISKS-IN-HIGH-RISE-RESIDENTIAL-BUILDINGS-A-DETAILED-GUIDE](https://www.gov.uk/government/publications/building-safety-guides-for-accountable-persons/managing-safety-risks-in-high-rise-residential-buildings-a-detailed-guide)

GRJ CONTRACTING (2024) 7 YEARS AFTER THE GRENFELL DISASTER: HOW HAS FIRE SAFETY CHANGED? – [HTTPS://WWW.GRJCONTRACTING.COM/BLOG/7-YEARS-AFTER-THE-GRENFELL-DISASTER-HOW-HAS-FIRE-SAFETY-CHANGED/#:~:TEXT=IN%20OCTOBER%202023%2C%20NEW%20SAFETY%20REQUIREMENTS%20AND%20REGULATIONS,HAS%20RELEASED%20A%20FULL%20REPORT%20DISCUSSING%20THESE%20AMENDMENTS](https://www.grjcontracting.com/blog/7-years-after-the-grenfell-disaster-how-has-fire-safety-changed/#:~:text=IN%20OCTOBER%202023%2C%20NEW%20SAFETY%20REQUIREMENTS%20AND%20REGULATIONS,HAS%20RELEASED%20A%20FULL%20REPORT%20DISCUSSING%20THESE%20AMENDMENTS)

AVON FIRE (2024) – FIRE SAFETY ACT 2021 AND FIRE SAFETY REGULATIONS 2022 – [HTTPS://WWW.AVONFIRE.GOV.UK/SAFETY/BUSINESSES/FIRE-SAFETY-LAWS-REGULATIONS-EXPLAINED/FIRE-SAFETY-ACT-2021/#:~:TEXT=THE%20REGULATORY%20REFORM%20%28FIRE%20SAFETY%29%20ORDER%202005%20IS,BEEN%20INTRODUCED%20THROUGH%20THE%20BUILDING%20SAFETY%20ACT%202022](https://www.avonfire.gov.uk/safety/businesses/fire-safety-laws-regulations-explained/fire-safety-act-2021/#:~:text=THE%20REGULATORY%20REFORM%20%28FIRE%20SAFETY%29%20ORDER%202005%20IS,BEEN%20INTRODUCED%20THROUGH%20THE%20BUILDING%20SAFETY%20ACT%202022)

ADMIN (2021) FIRE SAFETY DESIGN AND EVACUATION STRATEGIES FOR HIGH RISE BUILDINGS – [HTTPS://MFPA.COM.MY/2021/03/17/FIRE-SAFETY-DESIGN-AND-EVACUATION-STRATEGIES-FOR-HIGH-RISE-BUILDINGS/#:~:TEXT=IN%20RESPONSE%20TO%20THESE%20UNIQUE%20CHALLENGES%2C%20THE%20OVERALL,COMMAND%20CENTER%20FIRE%20FIGHTER%E2%80%99S%20ELEVATORS%20%26%20VESTIBULES%20](https://mfpa.com.my/2021/03/17/fire-safety-design-and-evacuation-strategies-for-high-rise-buildings/#:~:text=IN%20RESPONSE%20TO%20THESE%20UNIQUE%20CHALLENGES%2C%20THE%20OVERALL,COMMAND%20CENTER%20FIRE%20FIGHTER%E2%80%99S%20ELEVATORS%20%26%20VESTIBULES%20)