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**Project name:**  
Competence for Building a Safer Future

**Project ref:**  
Working Group 1 - Engineers

**From:**  
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**Date:**  
14 April 2019

**DRAFT**

# Memo

**Subject:** Assessment of Safety Case for the *Commercial Building* Rev A

One of the tasks of IRG/CSG Working Group 1 is to carry out a review of existing buildings with a view to creating a safety case for them. Two buildings were selected, one a residential and the other a commercial. This note concerns the commercial building that was visited on Friday 23<sup>rd</sup> November 2018 by the following Competence for Building a Safer Future Working Group members:

George Adams – WG1 (Chair)

Chris O'Regan – WG1

Anthony Taylor – WG8 (Chair)

John Briggs – WG8

During this visit data was collected concerning the commercial building, which was in a city centre and was constructed in 1950's. It is currently occupied by its owner. The following text is a description of the building and how it is to be assessed in terms of a safety case. From here on in the building will be referred to as the *Commercial Building* and aspects of it will be described in abstract form.

## DESCRIPTION OF BUILDING

The *Commercial Building* is a 27 storey structure with two levels of basement. There are plant rooms on 25<sup>th</sup>, 10<sup>th</sup> floors and both basement levels that provide heating, power and communication infrastructure throughout the building. It is located with a well-developed city centre adjacent to a river, water from

which is used to spread cool air through the building. It was constructed between 1957 and 1962 and consists of a steel frame structure that is clad in concrete and has in-situ reinforced concrete floor slabs and a concrete shear core that acts as both fire escape and lift shaft.

## OCCUPANCY AND USE

The *Commercial Building* has been in continued occupation since its construction, spanning over a period of 56 years. It has been primarily used for offices from which the owner occupier has been running its European arm of its business. There are no third party tenants within the building, thus negating the issue of landlord vs. occupier rights that are normally found in commercial properties.

Due to the nature of the type of work the occupier is involved in, the *Commercial Building* is in constant operation, 24 hours a day, 7 days a week. The only exception to this is the need to carry out maintenance works, that result in temporary closure of parts of the building.

## CONDITION OF BUILDING

The *Commercial Building* is advanced in its age with it technically drawing towards the end of its design life. Nevertheless the fabric of the structure is in good condition with little signs of deterioration.

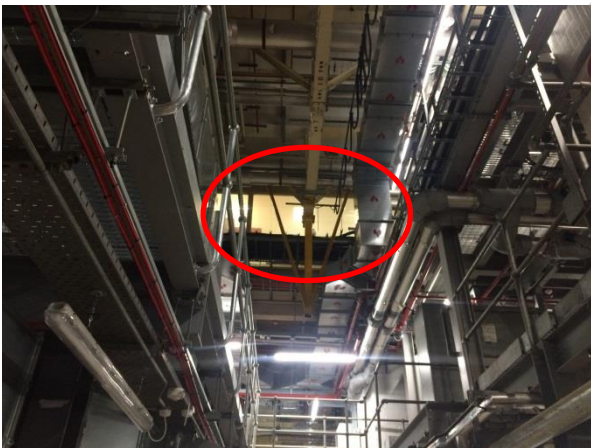
The same cannot be said of the existing mechanical and electrical plant, which is currently undergoing a significant refurbishment with most of the original installation being replaced.

Similarly the building envelope has undergone a significant amount of refurbishment as well due again to its age and the owner occupier's desire to extend the life of the building.

### **MAINTENANCE REGIME**

The owner occupier has invested in a robust maintenance regime of the *Commercial Building* that has resulted in creating an onsite facilities management team that ensures the continued safe and efficient running of the building.

Contained within the basement of the *Commercial Building* is an extensive monitoring station that assesses the heating, ventilation and power of the building. All communication infra-structure is principally monitored from the plant room on the 25<sup>th</sup> level, but is also overseen from other smaller hubs throughout the building.



*Multi-level plant room within the basement, with monitoring station circled*

While the building services aspect of the *Commercial Building* are under constant scrutiny, the fabric of the structure, which includes the primary and secondary elements as well as the envelope is monitored sporadically, with comprehensive surveys commissioned only when significant modifications are proposed to be carried out.

### **RECENT MODIFICATION WORKS**

The *Commercial Building* is currently undergoing a significant amount of refurbishment works that principally relate to the replacement of the plant that provide the building services. Currently there are large sections of now disused plant that is being broken down

and carefully removed to provide increased storage space within the *Commercial Building*.



*Replacement boiler plant installed in 2017*

Along with the plant replacement and upgrade there is the renewal of the glazing within the building envelope. The original glazing did not meet the current requirements of acoustics and thermal transfer and needed to be replaced. This has been done while maintaining the existing masonry/stone cladding that is considered as a key visual component of the *Commercial Building*.

The roof cladding to the *Commercial Building* was stripped back and replaced in February 2018 with a contemporary lining and finish to arrest any water leakage into the plant room below on Level 25.

Finally there is the installation of a link bridge structure that spans between the *Commercial Building* and a recently constructed structure that is of similar specification only using contemporary technologies and methods of construction. This bridge is considered to be a component of the *Commercial Building* and not of the adjacent building and therefore falls within the maintenance regime of the former structure.

### **KNOWN MATERIAL HAZARDS**

The *Commercial Building* was constructed at a time when asbestos was in common use. It therefore follows that any modifications to it have resulted in significant removal of asbestos where it was likely to be disturbed during the works.



*Plant rooms contain asbestos both in the containment lining and fabric of the structure*

Similarly the decommissioned plant that resides within the building does contain hazardous material such as asbestos and lead, requiring close monitoring with regards to exposure of it to the *Commercial Building's* occupants until such a time as it is eventually removed.

### **OPERATION OF BUILDING**

With the building being occupied almost constantly its owner occupier has seen fit to establish an onsite facilities maintenance team that monitors equipment and plant that ensures that it functions as intended.

This is an important facet of the operation of the *Commercial Building* that, while it is technically high risk in its form and level of occupancy, it is afforded the luxury of having a team of engineers and technicians whose responsibility is the safe running of the building. This must be taken into consideration when developing a safety case for the *Commercial Building* as the presence of this team acts as a significant mitigation measure to most risks relating to the safe operation of the building for its occupants.

### **SUMMARY**

While the *Commercial Building* is drawing towards the end of its design life, it is notable that the owner occupier has gone to great lengths to maintain it with the aim of significantly increasing projected lifespan.

This needs to be taken into consideration when developing the safety case for it as its age will be a constant source of risks that need to be mitigated against.

This is true for all structures that are undergoing a series of refurbishments and the study of the *Commercial Building* will most likely aid the development of safety cases for other older buildings.

Regards,

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