

BIM for the Conservation of Early Reinforced Concrete Buildings

Department of Architecture • Faculty of Engineering • University of Strathclyde

Ammar Z. M. Alayudin (1st Year PhD Student; Cristina Gonzalez-Longo (1st Supervisor)

AIMS AND OBJECTIVES

Early reinforced concrete buildings such as the Lion Chambers, an A Listed Building in Glasgow, have great architectural and cultural significance and should be conserved and reused. This research explores the use of Building Information Modelling (BIM) as a tool to assess the complexities of the buildings structure, construction and condition and to allow for an appropriate intervention using BIM dynamic analysis to assess different options. It will include consideration of all the relevant aspects required, including appropriate conservation and repair techniques, new design, methods and techniques to achieve an efficient building performance and comfort levels.

METHODOLOGY

The research started with an extensive literature review concerning the use of HBIM for conservation purposes, beyond the usual documentation. The construction of a detailed BIM 3D model followed. There are multiple datasets to be included in the model. Some acquired *in situ* and others from existing literature and documentation concerning the building, of different nature and in different formats. Developing data valorisation strategy in preparing BIM for the design and intervention process: the 3D model of the of the building consist of multi-scale process, from survey, analysis of the building and its structural and energy performance to design and intervention process to predict and assess expected improved performance.



SUSTAINABLE DEVELOPMENT G

11 SUSTAINABLE CITIES AND COMMUNITIES



Conservation of valuable existing buildings contributes to the quality of the environment and to the well-being and mental health of citizens

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

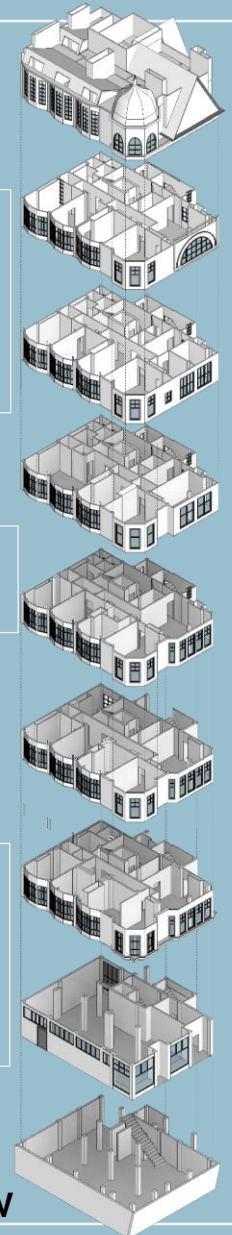


Architectural Conservation avoids material waste

13 CLIMATE ACTION



The proposed research allows for comprehensive analysis and assessment to ensure efficient building performance and environmental design.



LION CHAMBERS, Glasgow

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BIM Valorisation

- 3D model
- Semantic data valorisation

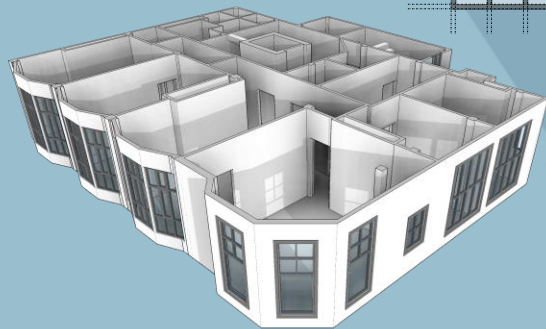
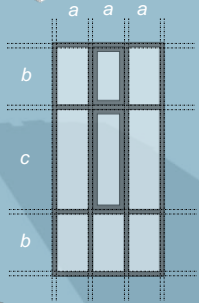
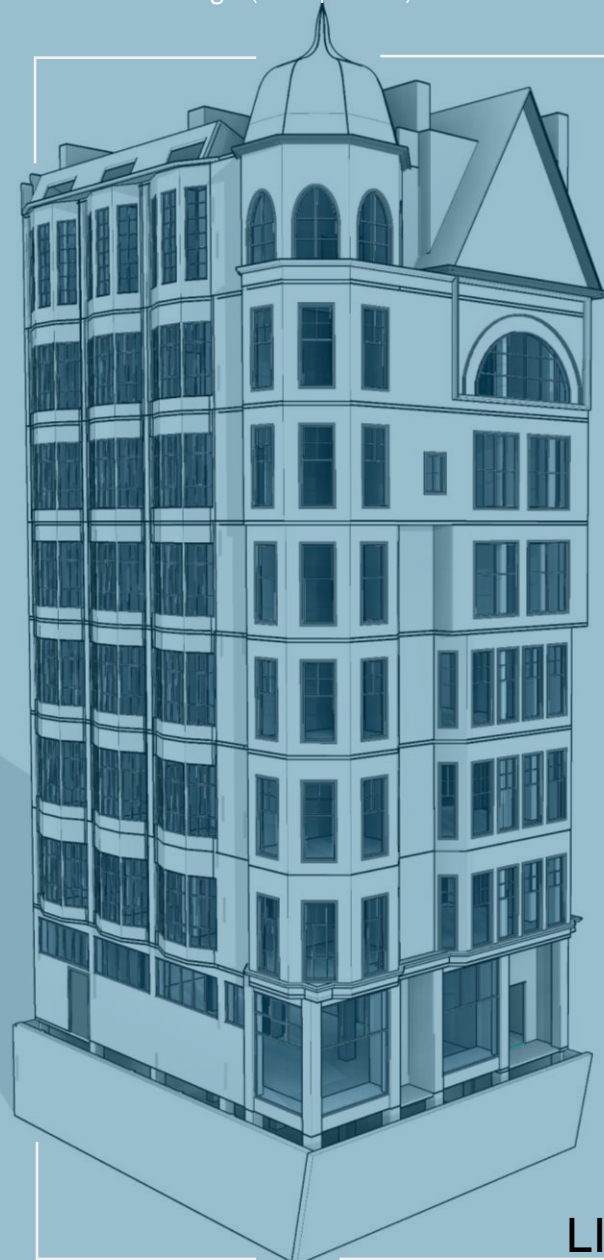
Analysis

Simulation Tools

- Thermal
- Moisture
- Structural
- Carbon cycle analysis
- Energy simulation

Common Data Environment

- Information management
- Collaboration management
- Data exchange



LION CHAMBERS
Typical Floor Diagram

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Thermal properties



Conservation

- Intervention design strategy
- Conservation planning
- Energy Consumption
- Cost evaluation



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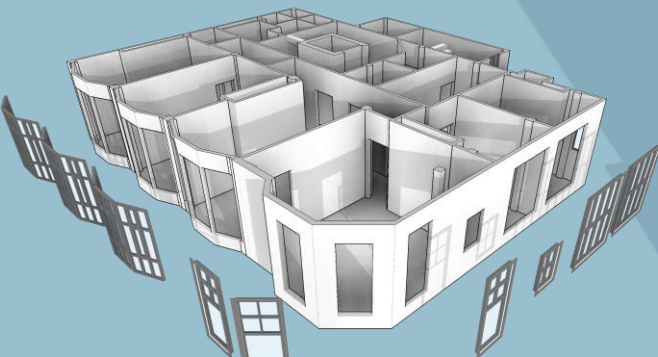
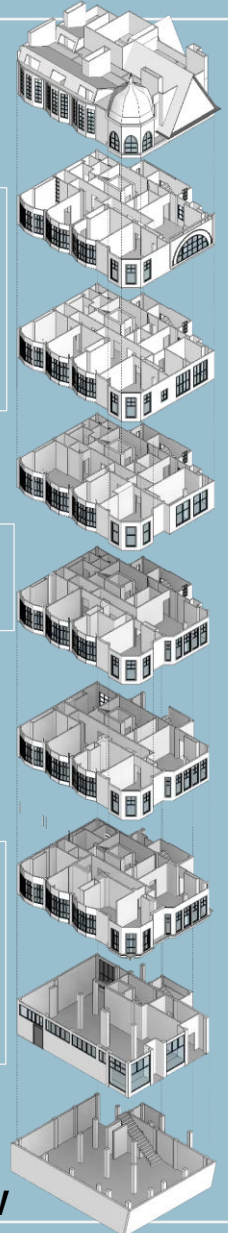


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