CASE STUDY

A 20th century heritage property

Retrofitting Edinburgh's existing buildings is crucial to meeting the goal of net zero by 2030.

This will include interventions of many 'hard-to-treat' properties: tenements in multiple ownership, as well as historic buildings that are protected for their heritage value. This pilot project created solutions to these challenges whilst establishing a repeatable delivery model for similar properties.

The property

The Canongate Housing development in Edinburgh is a group of B-listed blocks designed by Sir Basil Spence and built in the late 1960s, on the Royal Mile. Like many buildings of this period, it was energy-inefficient due to minimal insulation, single glazing and thermal bridging, generating high energy consumption and carbon emissions. Its fabric had significantly degraded, and residents suffered from poor ventilation, mould, and condensation issues. Completed in 2021, the energy-upgrade project focused on one block comprising twelve flats and two commercial units located on the ground floor – most of them occupied.

The approach

A 'whole house' approach maximised energy improvements, included urgent repairs and struck a balance between energy efficiency improvements and building conservation interventions. The crucial first step in energy retrofits, repairs are fundamental to maximal performance and long-term sustainability. This also increases the buildings capability to withstand the impacts of climate change.

The interventions

The conservation works included repairs to concrete balconies and exterior stairwell, the restoration of Spence's original exterior paintwork, and the reinstatement of the original window design.

Energy efficiency measures included:

- Installation of double-glazed windows;
- Insulation in the attic, the roof and within cavity walls;
- Installation of LED lighting;
- Upgrades to heating systems;
- Improvements to the ventilation through the installation of Mechanical Ventilation with Heat Recovery systems (MVHR).

Expected performance and improvements

- 54% reduction of CO2 emissions/year: - 26 tonnes CO2/yr.
- 60% reduction of energy consumption/year: - 123,842 kWh/year.
- 40% reduction of energy bills/year: £3,018 per year.
- EPC rating improvements: 4 flats from D to C, 5 flats from D to B, 3 flats from C to B.
- Improved indoor ventilation and thermal comfort levels.
- Reinstatement of original features, primarily windows and painting schemes.

Future challenges

- Technological barriers and high cost to consumers of low carbon heating.
- High costs of works and disruption to residents.
- Length of time required for implementation, especially community engagement.

Future opportunities

- Legislation for the facilitation of repairs and improvement in multiple ownership properties.
- Support to owners throughout the whole process.
- Need for more pilot projects to test the proposed delivery model in pre-1919 historic buildings.
- Job and training opportunities for the construction sector.
- Removal of VAT on building refurbishment.

Architects: John Gilbert Architects

Engineers: David Narro Associates (structure)

Engineers: Atelier 10 (M&E and environmental consultant)

Client: Canongate Development Owners Committee

Project coordination: Edinburgh World Heritage in partnership with City of Edinburgh Council

Funders: Scottish Government

Scottish Power Energy Networks

Edinburgh World Heritage and Proprietors

Project costs: £1,115,612.45 incl. VAT

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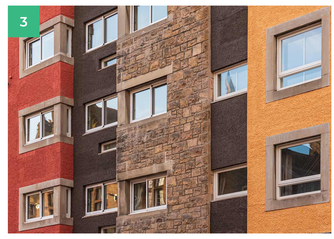

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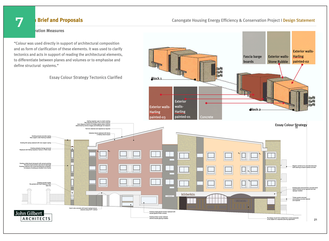

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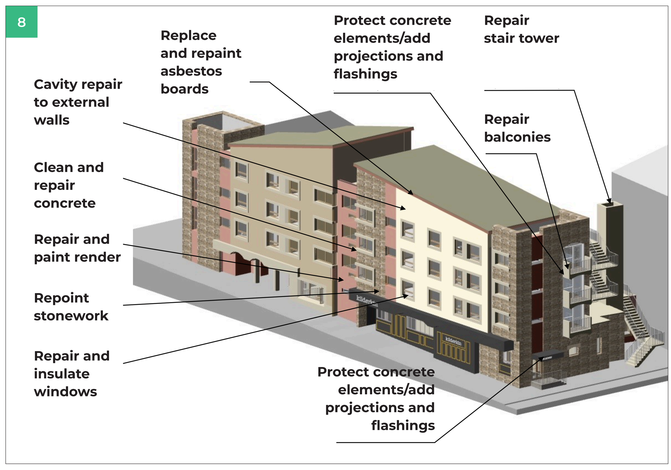

1 New windows awaiting installation.

2 Completed refurbishment from Canongate.

3 Detail of completed refurbishment.

4 Rear facade.

5 Thermal imaging of 'leaky' doors and windows.

6 Mechanical Ventilation with Heat Recovery system (MVHR) and smart control.

8 Reinstated colour scheme.

9 3D view of the building showing repairs needed.

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