

## Holyrood Park Lodge

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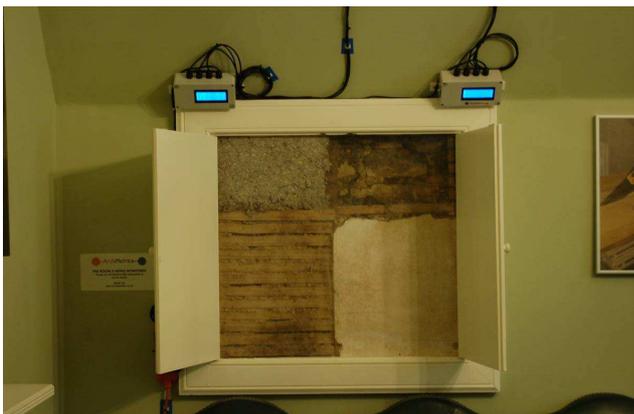
Blown cellulose insulation for mass walls

## Walls

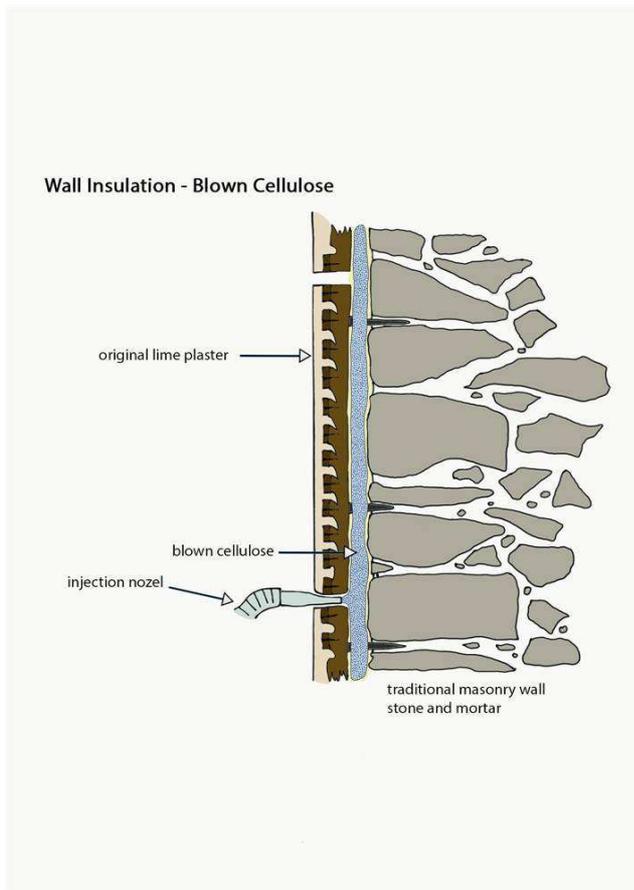
*What is the solution?*

Internal Wall Insulation (IWI) behind existing linings using blown cellulose fibres. This loose material is blown in through pre-drilled holes in the existing historic plaster lining. The depth of fill is normally about 35-40mm, and in most cases reduces the U-value from 1,2 W/(m<sup>2</sup>K) to 0,7 W/(m<sup>2</sup>K).

*Cross section of the wall build-up, available pictures of the solution:*



Viewing panel showing the blown cellulose top left; HES image



Indicative drawing showing the blown cellulose behind the existing lath and plaster lining; HES image

*Why does the solution work in terms of compatibility with conservation, moisture safety and energy improvement?*

The building is a two-storey cottage in Edinburgh built in 1858; it is protected, being Category B Listed. The measure allows minimum disturbance of the traditional fabric. The blown cellulose, the insulating material, allows a trapping of the air behind the plaster linings, reducing heat flow through the walls. The measure is technically compatible with the existing building fabric - the material is vapour open and capillary active. It allows the thermal upgrade of solid masonry walls while retaining traditional lime plaster linings. There is not a condensation risk, and water vapour is wicked and dispersed away. The energy improvement is around 35%.

*Description of the context:*

Holyrood Park Lodge is a Category B listed Victorian lodge building built in 1857 in a neo-gothic style, located in a prominent position at the entrance to Holyrood Park in Edinburgh. Primarily designed for the constables who policed the Royal Park, it is bounded by the Palace of Holyroodhouse on one side and the Scottish Parliament on the other. Since 2007 the lower floor hosts visitor information and shop centre for the Holyroodhouse area.

*Pros and cons of the solution:*

The measure requires removal of existing wallpaper down to the plaster layer. Many holes are required to be drilled (one every square metre) and re-decoration is required with lining paper and a vapour open emulsion paint. However, the measure allows retention of historic linings and the benefits they bring.

*Type of data available (level of information, simulation):*

The walls where this measure has been trialled have been tested for moisture safety and heat retention for over two years. Performance has been as expected. Modelling of the wall make up and comparison with measured results shows good correlation. These results are presented in the Refurbishment Case Study.

*Additional Information:*

This work was part of a bigger whole house approach to the thermal upgrade of traditional buildings. Work was done to the roof, the floors and windows; this is reported in the refurbishment case study.

*Is there any related publication? If yes, please provide any available link or document for further reading*

[https://www.hiberatlas.com/smartedit/projects/120/TP24 - Review of Energy Efficiency Case Studies \(2018\).pdf](https://www.hiberatlas.com/smartedit/projects/120/TP24 - Review of Energy Efficiency Case Studies (2018).pdf)

This HES Technical Paper describes the previous projects where the measures used in the Lodge were tested.

*Link to best practice example (Hiberatlas):*

<https://www.hiberatlas.com/en/holyrood-park-lodge--2-120.html>