

## Gingerbread Abstract

### **Title: Reducing carbon emissions from residential heritage buildings in Cumbria while retaining their heritage values.**

My research is investigating ways to reduce carbon emissions from Cumbrian heritage buildings without damaging the unique and special values these buildings have for our local and national history and culture.

I am looking at three main aspects, the:

- Particular heritage values residents invest in their buildings;
- Energy behaviour of building residents
- Embodied impacts of different solutions (which is the energy/carbon required to make, transport and construct any components needed for carbon saving measures)

I am particularly looking at the carbon saving potential and embodied carbon costs of local and traditional materials and renewable energy technologies. My heritage building is therefore made out of Grasmere Gingerbread<sup>1</sup>, which is a local, traditional and low carbon Cumbrian material!

This heritage building is currently being retrofitted with renewable solar water heating panels, electric generating solar panels and a 'slinky' ground source heat pump. There are also some traditional sustainable materials, wood and stone, stacked ready to use in the garden and some rather less sustainable modern insulation.

I am trying to identify ways to reduce carbon that are sensitive to the heritage values that older buildings may have.

Do you think the retrofits to this building are sensitive to its heritage values?

(200 words)

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<sup>1</sup> This gingerbread is even reusable as it is going to be greatly enjoyed by my family and I after the competition!

**List of ingredients:**

**Main building component:** Grasmere Gingerbread

**Window glass:** crushed melted boiled sweets

**Cumbrian slate path, garden wall, annexe and building stones:** Icing

**Logs and ceiling beams:** cinnamon sticks

**Flowers:** chocolate decorations

**Insulation:** candyfloss

**Ground source heat pump:** liquorice lace

**Solar thermal panel:** liquorice, edible silver icing balls and silver icing paint.

**Solar photovoltaic panel:** edible decorative cake gems, edible silver lustre mixed with mead to create the paint.

**Roof support:** liquorice logs.

**Base:** Marzipan

**Heritage building owner:** inedible Playmobil!