






# Park Keepers Cottage: 1930s Listed Building with newly installed cavity wall insulation and air source heat pump



## Overview

<b>Age/Period:</b>	1930s, Listed
<b>Type:</b>	3 storey semi
<b>Years in residence:</b>	1
<b>No. Bedrooms:</b>	4
<b>Wall type:</b>	Ashlar stone and cavity wall
<b>Area:</b>	Larkhall
<b>Status:</b>	Listed, World Heritage Site

## Key Features

-  Double glazed windows and doors
-  Cavity wall insulation
-  Loft insulation
-  Draught-proofing
-  Air Source Heat Pump (ASHP)

## Introduction

Stephen and Mary Ashton moved into their 1930s home last year and have been hard at work since making it more sustainable. When they purchased the home, they were attracted by its beautiful location in Alice Park. The home is what used to be one of two park-keeper's cottages, Art Deco in style, with stone reliefs carved on the front.

They are both concerned about climate change and wanted to ensure that their new home minimised its impact on the planet. sustainable. For their 70<sup>th</sup> birthdays they had promised to have 70 conversations with 70 people about how to make the world more sustainable.

They are hoping Green Open Homes will be part of this commitment!

Stephen and Mary said *"the debate often seems to be couched in terms of how much money you can save by making these changes. Our take on it is different. If 'cheaper' arises as a consequence, great. But we're doing it simply because its right."*

The house had been redeveloped immediately prior to Grade II listing in 2007 with extra bedrooms added in the roof, UPVC double glazing and a kitchen extension. The double glazing and rooflights would probably not have been approved under Listed Building Consent post listing.

Stephen and Mary researched the best types of measures for their home for themselves online.

## Features

### Cavity wall insulation

They originally thought that the house's walls didn't have a cavity and were made of solid stone. Luckily the energy assessor for their heat pump spotted that they had deep 110mm cavity walls while checking the loft. Cavity walls were introduced in the 1920s and by the 1930s most homes had cavity walls but this can be more difficult to determine if the homes are Bath stone faced.

Although installing cavity wall insulation is normally straightforward, because the property was listed it took quite some time to resolve with

B&NES Council's Conservation Officers the best type of matching mortar to be used to fill in the holes which needed to be drilled to insert insulation into the cavity. They chose to inject polystyrene beads over mineral fibre because of their better insulating properties and longevity. The insulation work cost £1900.

Stephen's top-tip is that you should include reference to [Rowland's Pre-mix Bath Stone Lime Mortar](#) in your list building application.

### Loft insulation

Stephen and Mary topped up the existing 6" of loft insulation with a further 270mm of insulation.

### Air Source Heat Pump

By installing an air source heat pump Stephen and Mary were aware that it would reduce their heating and hot water CO2 emissions by 75% without any other changes to the property but were unsure about its impact on running costs.

They spoke to a number of installers but could only get one, [Sustain](#), to provide a quote. Sustain sent an energy assessor round to determine what capacity heat pump they needed and whether they would need to upgrade their radiators as heat pumps need larger radiators to be more efficient.

With this and the recommendation of cavity wall insulation Stephen successfully submitted a listed building request.

The heat pump installation was relatively straightforward, taking a week with minimal disruption. Some additional pipework was run through the house from the new heat pump at the rear of the building to the cupboard with the hot water cylinder and most radiators were increased in size. The installation cost £13,000 (£18,000 minus the £5,000 government grant).

Although very happy with the installation there are couple of outstanding issues to resolve:

- they are currently unable to control the timing of their hot water which would allow them to make better use of cheaper time-of-day electricity tariffs
- their electricity bills seem higher than expected

They are planning on resolving these issues with their installer and with help from Transition Bath over the coming winter.

### Solar PV

During the listed building consent process, they were advised that the installation of solar PV wouldn't be approved because of their roof's prominent location in the park, despite the existing roof lights and the property behind having solar panels.

Instead, they have invested in [Ripple Energy](#), which builds wind and solar farms. The investment offsets the remaining carbon emissions of their home and provides a discount on their electricity bill. It's a way of reducing your home's carbon emissions without installing solar PV, and Ripple claim is 65% cheaper than installing your own panels.

### Possible next steps

The Ashtons would like to insulate under their floor and are investigating the use of [insulation sprayed onto the underside of their suspended timber floor by a robot](#) which would minimise disruption to the property (£3,800).

Having just been deeply impressed by Henry Dimbleby's *Ravenous* about the 'big picture' of food supply in the U.K. – the next step is to follow his easily-implemented advice on how to alter your diet to reduce climate impact!

### Impact

It's too early to tell what impact this work has had on their energy bills but the combination of the cavity wall insulation and the heat pump should theoretically lead to a 10% reduction in overall running costs.

Carbon emissions will be reduced by 85%, and with their investment in Ripple Energy to zero.

### Contacts

Cavity wall insulation: [Warmcare, Winford](#)

Air source heat pump: [Sustain Heating & Renewables, Clevedon](#)

Mortar: [Rowland's Pre-mix Bath Stone Lime](#)