CASE STUDY

Heat pump installation: Angus Housing Association

1 Project Overview

Introduction

In March 2022, Angus Housing Association completed the Kirkbank Renewable Heat Project.

This project involved installing 32 air source heat pumps, solar PV and batteries in Kirkbank properties.

The main aim of the project was to improve the poor energy performance ratings of the properties, bringing them in line with Energy Efficiency Standard for Social Housing 2 (EESSH2). Before the project started, many of the properties were EPC band E. EESSH2 requires that they become band B by 2032, where possible. Angus Housing Association felt that upgrading the heating system, which was previously electric storage heaters, would help them to achieve this improvement. They also wanted to increase tenant satisfaction, as the poor energy performance was making the properties more expensive to heat.

Project name: Kirkbank Renewable Heat Project
Landlord: Angus Housing Association

Installer: Warmworks and subcontractors
Managing agent: Warmworks, in partnership with Angus Housing Association
Energy consultant: RECUK Limited

Overall cost: £1,224,027
Funding source: Social Housing Net Zero Heat Fund: £550,149
Angus Housing Association: £673,878

Heat technology: Air source heat pumps

Building archetype: 32 terraced bungalows
Year: Approximately 1975
Tenure: Social rented housing

Location: Kirkbank, Auchmithie, East Scotland

Project timeline:

- 2018: Inception and tenant engagement
- 2019: Installations started
- 2020: Delays due to the Covid pandemic
- 2021
- 2022: Project completed

Measures

The housing association hired an energy consultant to establish which measures to install. They recommended air source heat pumps, solar PV and battery storage. These measures were installed in all 32 properties. Before this project went ahead, the housing association had considered a ground source heat pump, but this proved to be too expensive.

The properties recently had cavity wall insulation and double glazing installed. However, storage heaters meant the EPC ratings remained poor and installing heat pumps offered an effective alternative. Solar PV and battery storage were installed in addition to this, which allowed tenants to see further savings as they were able to generate and store their own energy.

2 Project management

Contractor

Warmworks were directly appointed through the Scotland Excel Energy Efficiency Framework. They served as both the managing agent and installer, alongside subcontractors. Impact evaluation and tenant engagement were planned to be carried out by third-party contractors; however, this fell through and, as a result, were delivered by the housing association.

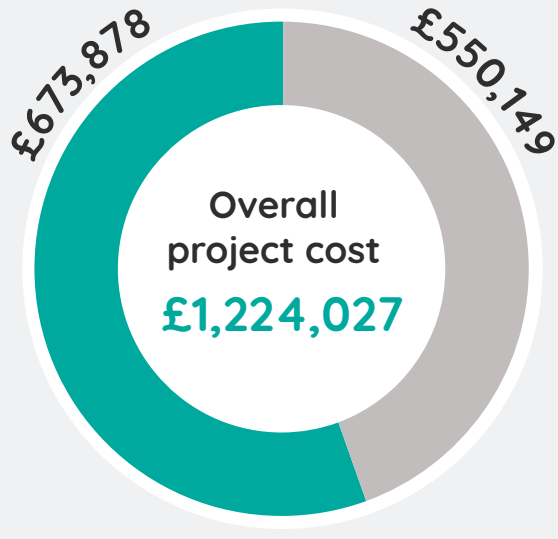
Tenant engagement

Tenants were kept informed about the project via letters, one-to-one visits, calls and events. An information event was held at a local community space before the work began. This was an opportunity for Warmworks and Angus Housing Association to give tenants more details about the project and address questions and concerns. Initially, some tenants had not understood that their home needed to be emptied for the installation and were concerned about this upheaval. Tenants were also unsure whether heat pumps would be a good option for them in terms of comfort and cost. The engagement events helped tenants to overcome these concerns and identify those who needed extra support.

To help with the disruption, the housing association provided information on where to get new floor covering, arranged help for furniture removal and identified additional support needs.

They also made a void property available to provide a breakout space. During the installation, this gave tenants a quiet place to sit, bathroom access when water was turned off and wifi when electricity was

3 Costs



FUNDED BY

- Angus Housing Association
- The Social Housing Net Zero Heat Fund

The cost per property was approximately £38,250. A further breakdown of the costs was not available for this project.

Tenant engagement and impact evaluation were delivered by the housing association and costs were covered by existing staff budgets. Project management was delivered by the housing association alongside the managing agent, Warmworks. This was funded by the housing association.

4 Project impact

Evaluation approach

Due to the planned evaluation contract falling through, the evaluation was delayed and was still ongoing at time of writing (2023).

Energy consumption

Initially the housing association are engaging with all households by phone to arrange a face-to-face appointment. Tenant's understanding of how to use the heating system will be checked and their bills pre- and post-install will be analysed. The housing association will identify if there is a difference between expected and actual energy performance and energy savings. Action points will be developed at each appointment to address any outstanding issues.

Tenant satisfaction

A survey will be conducted with tenants at the appointment. It will cover tenant satisfaction with the measures and with the support received from the various organisations involved. The housing association aim to survey all participants. An engagement event is also planned once the post-install visits are completed. This is to allow tenants to report on any ongoing challenges and receive support.

Battery storage and energy generation

The managing agent will provide monitoring data including:

- energy generated by the solar PV
- pattern of energy use
- how much is being stored and discharged from the battery.

Energy performance ratings

Energy Performance Certificates (EPCs) are also being used to evaluate the impact of measures on the modelled energy performance of the properties.

> **Everything went well.** They did the air source heat pump first, then the panels and the battery, which I was pleased with.
>
> Tenant

Results

Energy consumption
Data gathered by the housing association so far indicates significant energy bill savings, with one tenant reporting that their electricity costs fell to as little as £7 per week in the initial months after the installation work was completed. Another tenant reported, "I am currently saving £150 a month".

Energy performance rating
The installations had created a significant improvement to the EPC rating of the properties, showing an average Standard Assessment Procedure (SAP) increase of 14 points on each property from the early data gathered. Prior to the installation the average SAP score was 58.

Tenant satisfaction
Households have reported a positive experience throughout the process, as is reflected in the quotes provided by the housing association.

> "**It's absolutely life changing!** I can't even explain to you how much better it is compared to what I had before. The timers are great and when the heating comes on, I can feel the house heat up no problem."
>
> Tenant

> "**The survey was really quick and easy.** They had a look at everything they needed to and I was able to ask them questions about what was being installed. I felt this was quite good as instead of telling me what was going to happen, they actually involved me too, which I appreciated."
>
> Tenant

5 Successes, challenges and recommendations

Engagement

Challenge:
Households were unsure if heat pumps were a better option than storage heaters, and especially had concerns about the associated upheaval.

Solution:
In these cases, households were engaged one-to-one to provide reassurance. It was explained that the heat pump would be more cost effective than their storage heaters, especially with the additional savings from the solar PV and battery storage. They also assured tenants that the install would not create a mess or cause damage to their homes. This tenant support was successful, with 32 out of 36 proposed properties taking part.

Recommendation:
Providing one-to-one meetings and making a void property available as a breakout space helps to overcome common concerns that can result in refusals.

Cost savings

Challenge:
Installing measures to all properties is expensive. It can be challenging for smaller clients to justify the cost.

Solution:
The housing association partnered with a managing agent who helped navigate the process of applying for funding. They also took advice from the energy consultant to combine the heat pumps with other solutions, such as solar PV with battery storage. This meant that tenants are seeing significant savings and has justified the overall cost of the measures.

Recommendation:
The housing association suggest working with an experienced managing agent on funding applications, in particular for smaller housing associations. They also recommend combining installations of clean heating systems with other solutions, to see a further return on investment. However, the housing association highlighted that future maintenance and upgrade costs should be taken into account.

Impact evaluation

Challenge:
The housing association's partnership with a tenant engagement and impact evaluation consultant fell through. This meant that pre-installation impact evaluation did not happen as planned. It also caused a delay on post-installation impact evaluation.

Solution:
The housing association have developed an in-house impact evaluation approach. This ensures tenants benefit from the system and have challenges resolved. This includes post-installation events, one-to-one visits and surveys. Through this method, the housing association can capture the impact of the systems and identify issues, which are escalated so that they can be resolved.

Recommendation:
The housing association recommend that environmental sensors are used for a significant period before, during and after the installations are completed. They suggest measuring humidity, CO2 and temperature. This would better illustrate the impact the measures have had and further justify the overall cost.

6 Project contact

Angus Housing Association welcomes visits from other housing associations. Please email Chris King **chris.king@aha.org.uk**

This is part of a suite of case studies that can be found on the ClimateXChange social housing decarbonisation project webpage, alongside a summary report, which gives an overview.