SCSP Innovation Fund Case Study

Barrhead Housing

Summary

The Sheltered Energy 5G Sensors in Barrhead project aims to combat fuel poverty and improve energy efficiency for tenants in Barrhead Housing's sheltered housing complex. By installing 236 smart 5G sensors and meters across 50 properties, the initiative will provide real-time insights into energy usage, heat loss, and mould risks. These insights empower tenants to make informed decisions about energy consumption, while enabling proactive management and support services. Project partners include Aico, MCN, and Barrhead Housing.

Watch the Barrhead Housing case study video.

Introduction

Context and Rationale

In March 2022, East Renfrewshire Council's report "Humanitarian Research into the Impact of COVID-19" (Reference: Covid-19 impact report - East Renfrewshire Council) highlighted the pandemic's adverse effects on vulnerable populations, including tenants in high Scottish Index of Multiple Deprivation (SIMD) areas. Rising energy costs and ongoing health challenges have further exacerbated the struggles of sheltered housing residents. This project addresses these challenges by integrating smart energy solutions to optimise energy consumption, reduce costs, and improve tenant well-being.

Project Objectives

- Install 236 5G Data sensors to monitor energy usage, heat loss, and environmental conditions in 50 properties with 28 of these being sheltered accommodation.
- Enable tenants to access real-time data through a user-friendly portal to make informed decisions.
- Identify tenants at risk of fuel poverty and provide tailored welfare support services.
- Use 5G sensor data to inform future investments in energy efficiency and net-zero carbon housing.

Supporting Data

Problem Statement

- 72% of Barrhead Housing properties are in Scotland's 20% most deprived areas, with high rates of fuel poverty.
- The rising cost of living has disproportionately impacted residents in sheltered housing complexes.
- Only 4% of the residents claimed they do not worry about Energy costs and 17% monitored their energy usage.

- Current energy consumption patterns lack transparency, leading to inefficiencies and increased costs for both tenants and housing providers.

Glasgow City Region Context

This project

- aligns with Glasgow City Region's goals of tackling inequality and promoting sustainable living.
- supports Barrhead Housing's 2030 Vision and Community Investment Strategy to reduce fuel poverty and improve living standards.

Project Objectives

- Enhance tenant control over energy usage and reduce energy bills by providing real-time insights, using 5G enabled sensors.
- Reduce fuel poverty and carbon footprints through better energy management and proactive interventions.
- Gather actionable data to inform the transition to net-zero carbon heating systems across Barrhead Housing's portfolio.
- Provide a replicable model for smart social housing initiatives in Scotland.

Approach

Collaborative Design

This project brings together:

- **Aico**: Technical expertise in energy management, 5G sensor provision, and tenant training.
- **MCN:** Installation of devices and on-site tenant demonstrations.
- **Barrhead Housing**: Project management, tenant engagement, and welfare support services.

Implementation Plan

1. **Phase One (November 2024)**

   Sign service agreements, install devices, and onboard tenants through workshops and digital drop-in sessions.

2. **Phase Two (December 2024 - February 2025)**

   Ongoing monitoring, tenant support, and data collection.

3. **Phase Three (February 2025 - March 2025)**

   Data analysis, reporting, and development of a comprehensive case study.

4. **Phase Four (March 2025)**

   Submit final reports and sustainability assessment.

Evaluation Framework

- Quantitative Measures:
  - Reduction in average energy bills.
  - Data accuracy and actionable insights from 5G sensors.
- Qualitative Measures:
  - Tenant satisfaction and confidence in managing energy usage.
  - Improved indoor living conditions (e.g. reduction in mould risks).

Realtime Data

- The Installation of the 5G sensors meant that Tenants could see the Real-time data.
- Real-time data empowered tenants to make informed decisions, reducing energy waste and costs.
- Real-time data empowered tenants to adjust and improve their internal living conditions around air quality, humidity and room temperature and receive tailored recommendations from the app advising them on how to remedy issues or incorporate preventative maintenance solutions, to stop issues from occurring in the first place.
- Data revealed key areas for improvement, including insulation and heating system efficiency.

Tenant Engagement

- Access to online portals and apps is not something the residents were familiar therefore with; therefore, staff spent dedicated time with residents to download the app to show them how to use these.
- Positively altered the Digital Drop-in in the Sheltered Housing with focus on reviewing the humidity, heat and CO2 data the 5G sensors produce and actively engage with residents.
- Created a video to show residents how easy it is to download the app on to their phones, in addition to a step-by-step guide as well led to better engagement with residents.
- Proactive identification of tenants at risk of fuel poverty enabled tailored support services.

Findings and Key Insights

- Pre surveys showed only 4% of residents did not worry about their energy cost but the post survey now shows 45% state they will now worry about their energy costs.
- Through our communications with residents, it was clear they did not track the level of heat or were concerned around the air quality within their home.
- 91% of Residents now say they feel in control of their energy costs, an increase of 5%.

91%

of tenants now say they feel in control of their energy costs

70%

of tenants would recommend the 5G sensors to their friends

- 17% increase of tenants know how to monitor their energy use.
- 44% of tenants can see the benefits of the 5G sensors.
- 1/3 of tenants are using the digital drop-in sessions to learn more on the 5G sensors.
- 70% of tenants would recommend the 5G sensors to their friends.

Now the 5G sensors are well established within the property, tenants have asked for sessions every few months to provide an update on the information that Barrhead Housing have gathered. Also, tenants wish to know what Barrhead Housing are going to do to improve any areas of concern. This will give our tenants reassurance that we are actively responding to the data we are receiving from the 5G sensors.

Stakeholder Feedback

- Tenants appreciated the ability to monitor their energy usage and adjust to improve comfort and reduce bills with an increase of 15% on the number of residents that now monitor their energy usage.
- Barrhead Housing staff valued the actionable data for planning future energy efficiency investments.

Key Considerations

Facilitators

- Strong tenant engagement through workshops and on-site support.
- Collaboration with experienced partners ensured smooth device installation and operation.

Barriers

- Digital literacy challenges among some tenants required additional training and support.
- Not all residents had a smart device to download and use the App.
- Limited timeline for data collection posed challenges for long-term impact assessment.
- Obtaining historic Energy use data.

Learnings

- Early and consistent tenant engagement is critical for adoption and success.
- Regular feedback loops improve service delivery and tenant satisfaction.

Conclusion

The Sheltered Energy 5G Sensors in Barrhead project successfully demonstrated how smart energy solutions can provide people real time data which allows people to alter their behaviour in their homes, reduce fuel poverty, enhance tenant well-being, and provide actionable insights for housing providers. The initiative aligns with Barrhead Housing's strategic goals and offers a scalable model for similar projects across Scotland.

Next Steps

- Use insights from the pilot to secure funding for scaling the initiative across all Barrhead Housing properties.
- Share findings and best practices with the Federation of Local Associations in Renfrewshire and East Renfrewshire (FLAIR).
- Develop additional tenant training programs to address digital literacy challenges and maximise platform adoption.

Find out more about the project on the Glasgow City Region website.

Sustainability Plan

Barrhead Housing will work with Aico to provide 10 years of ongoing support for the installed devices. Insights from this project will inform the phased rollout of net-zero heating systems and fuel poverty reduction initiatives. Collaboration with FLAIR and other housing associations will ensure best practices are shared and scaled across the region.

Acknowledgements

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Disclaimer

The findings presented in this case study reflect the independence of the project and the collaborative efforts of all stakeholders. No conflicts of interest have been identified.