

# Climate Change Asset Decarbonisation Design Project: Alchemai

Cabinet Member: Environment & Energy  
Contact: Robert Craighead

## 1. Purpose of the Report

To present and request approval from members to accept the successful application to the Innovate UK's Net Zero Heat innovation programme and join the working consortia.

## 2. Background and Discussion

- 2.1 Innovate UK is the UK's innovation agency who is responsible for supporting the government's vision to be a global hub for innovation by 2035. One of their focuses is on mobilising decarbonisation within building and heating sectors, which is predominately via their Net Zero Heat programme. Specifically, the Net Zero Heat programme aims to address and remove barriers that hold back deployment of known and proven technologies that could provide the rapid decarbonisation that is so badly needed.
- 2.2 Bassetlaw District Council was successful in sending a member of the Climate Change Team to the Innovate UK's Design Engineering Innovation Lab in September 2023. This was a five-day collaborative workshop to develop project ideas for delivery of net zero heat related building upgrades. The officer represented the council in joining a small handful of consortia projects, with the Alchemai project being successfully funded.
- 2.3 *Advanced Low Carbon Heat and Energy Modelling Accelerating Investment*, also known as Alchemai, is a £2.45m project that aims to rapidly mobilise decarbonisation of building designs that minimise capital expenditure and open opportunities for projects to be rolled out on a portfolio scale, further facilitating new financing opportunities. Bassetlaw's roll in this project is a principal asset owner. The Council will be responsible for offering a range of building sites and architypes for the project to design. It is the climate change teams subsequent priority to then mobilise capital projects where investment and finance opportunities are identified.
- 2.4 To facilitate these works, the Council will be allocated a £314k portion of the total consortia scheme. This funding will be used to purchase and install the sensors across the proposed Council sites and cover staff time that will be devoted to the project. The official project will operate for 18 months, commencing on the 1<sup>st</sup> of April.
- 2.5 The project brief and aims are described below from the successful application. Further information about the project and its partners, spend commitments and project outlines can be found in the appendices.

**Advanced Low Carbon Heat and Energy Modelling Accelerating Investment (ALCHEMAI) will transform how we carry out retrofits and building upgrades to millions of non-domestic buildings in the UK.**

*The current approach to net zero building upgrades is **filled with risk and uncertainty**. Decisions are made on assumptions and there is a lack of accountability. Hard to treat properties frequently get left behind for being too difficult, and budget holders have no choice but to operate on a "one building at a time" footing. The data does not exist to allow more strategic investment decisions to be made, putting huge strain on the public sector purse. The overall outcome is that vital facilities within our communities are at a risk of closure as they are becoming too expensive to run, and too risky to upgrade.*

*The innovation in ALCHEMAI's project **uses immersive Digital Twins (DTs), to fuse sensor technology, Passivhaus Retrofit, electricity trading and grid flexibility to deliver accessible, affordable clean heating for a diverse range of buildings and occupants**. Our energy modelling encompasses fixed and flexible load across electrical and heat domains, local renewables and storage. Site data validates and refines each Digital Twin.*

*The project will be tested across 15 different buildings located in England, Scotland and Wales, with a range of building types included.*

*User engagement is vital to ensure that appropriate recommendations are made that take into account the users of the building and their needs. The team have planned an extensive engagement programme for each test site, the outcomes of which will feed into the development of the digital twin solution.*

*The outcome of the project will:*

- *Determine optimised building upgrades*
- *Minimise payback horizon*
- *Create a range of demonstrator sites*
- *Maintain comfort levels and building integrity*
- *Enable building upgrades at scale and accessible to all*

*This will address the barriers which estate owners face when retrofitting and unlock investments. It will create a steady workstream of opportunities, facilitating investment both in and by the industry, creating more job opportunities, bringing benefits to supply chain partners and strengthening the industry's engagement with digitisation and modern methods of construction.*

*Finally **ALCHEMAI will help safeguard vital buildings which are at the heart of our communities** by making them cost effective to operate and sustainable.*

- 2.6 Approving and accepting the Council's partnership in the Alchemai consortia exhibits our ability and appetite to be a trailblazing authority towards our Net Zero Targets. It will greatly benefit our growing portfolio of actionable projects and further opens alternative methods of investments or project finance due to the scale and detail provided.

### 3. Implications

a) For service users

The proposal will aim to create new opportunities to decarbonise the Council's built estate and rapidly mobilise projects in a fashion that would not otherwise be feasible.

b) Strategic & Policy

Supports the Vision 2040 and the 2023-27 Council Plan "to implement an emissions strategy to reduce the Council's operational emissions to net zero by 2030".

c) Financial - Ref: 24/104

The Council's allocation from this programme is 100% grant funded from Innovate UK. The breakdown of the allocation is below, funding covers staff time spent supporting the project and the sensors that will be utilised to analyse the sites.

**Bassetlaw District Council's Project Cost – 100% Grant Funded**

Labour - £45,308

Overhead Costs - £9,062

Materials - £208,000

Subcontracting - £52,000

Total - £314,370

Finance have reviewed the financial implications of this report and have no immediate concerns, however due to the value of capital investment required, it is recommended that this proposal is subject to a more detailed business case.

d) Legal – Ref: 199/03/2023

No legislative impacts arise from this report.

As this is a Key Decision this will be referred to Overview and Scrutiny for post decision scrutiny.

e) Human Resources

The allocation of the climate change teams' time to effectively manage the project will be funded by the project.

f) Climate change, Environmental

The Vision 2040 and 2023-27 Council Plan have set ambitious aims for the District including net zero 2030 for internal emissions. This project will directly work towards these ambitious aims for Bassetlaw.

g) Community Safety, Equality and Diversity

Successful implementation of this project will ensure that spaces taken forward for decarbonisation projects are fit for purpose for all users as EDI feature as a key part of our project proposal.

h) GDPR

This project is currently embargoed until the 5<sup>th</sup> of March by UKRI. After this point, winning applicants are welcome to advertise their success.

i) Key Decision reference number: **1060**

## **4. Options, Risks and Reasons for Recommendations**

- 4.1 Reject the funding project and continue current work packages as described in the Climate Change Strategy.
- Core fabric upgrades and essential maintenance progressed through capital bids through invest to save projects.
  - Buildings identified with end-of-life heating systems applicable for additional decarbonisation design and capital support.
  - Progress with decarbonisation work is a slow and deliberate process with risks of not meeting the 2030 targets.
- 4.2 Accept the Innovation funding project and allocate adequate time and support to the opportunity and maximise its potential outcomes.
- In addition to the previously mentioned methods for building improvements, the Alchemai project opens up new opportunities with a wider array of decarbonisation capital investment opportunities.
  - Pilot scheme with unknown final results, although all work package yields supporting the strategic aims of the Council.

## **5. Recommendations**

That Cabinet resolves to:

- 5.1 Approve the Council's successful consortia application and give authority to the Director of Corporate Resources and relevant officers to utilise the funding as required by the project's outlined agenda.
- 5.2 That delegated powers are provided to the Director of Corporate Resources (Section 151 Officer) to determine the viability of this proposal following submission of a more detailed business case.

**Background Papers**  
**Location**