

WP5: Affordable Zero-Carbon Housing

Collaboration between Cambridge City Council and Eastern New Energy to deliver affordable zero-carbon housing

Scoping note: Draft for discussion - 17th August 2021

1 Introduction

Eastern New Energy (ENE) is a collaborative research project. It is led by the University of East London.

The project seeks to identify, understand and overcome barriers to rapid decarbonisation at the regional, district, locality, community, organisation, household and individual levels.

The research process involves:

- 1) Identifying barriers to rapid decarbonisation.
- 2) Gathering stakeholders who share this problem together with with ENE Delivery Partners and other interested parties into **'Innovation Clusters'**.
- 3) These Innovation Clusters will analyse and attempt to remove these barriers through collaborative research.

2 The Affordable Zero-Carbon Housing Innovation Cluster

ENE Work Package 5.1 (New-build housing) focuses on delivering affordable zero-carbon housing.

The Work Package objective is to work with innovators, the construction industry supply chain and organisations with a need to build and provide affordable zero-carbon housing to design and develop several "Affordable Zero Carbon (AZC) demonstration projects" across the East of England Region.



3 The need for a different approach to this development

This collaboration to build an AZC housing demonstrator between CCC and ENE requires a different approach to the standard/norm.

Key differences include:

- 1) The need to incorporate AZC innovations into the designs for the housing and overall development.
- 2) The need for the main contractor to work with innovative products and services (some of which they will be unfamiliar) in the construction of the development.
- 3) The need to integrate the development timeline with the ERDF project timeline.

Key ERDF deadlines are:

- Confirming when ERDF eligible expenditure will happen (deadline: end of December 2021).
 - Spending ERDF eligible expenditure (deadline to be confirmed).
- 4) The need to ensure all project expenditure for which we want to claim ERDF grant for is procured in an ERDF compliant way.
 - 5) The need to respect CCC's standard housing development and procurement procedures, but also retain sufficient flexibility to incorporate AZC innovations into the planned design/delivery approach.
 - 6) The need to ensure that planned innovation activity does not compromise the project timetable.

4 Key risks to CCC and ENE achieving the objective of delivering an AZC demonstration project

Potential problem areas we anticipate could compromise a successful outcome include:

Risk 1	Architectural and M&E Services appointed by CCC that subsequently struggle to use ENE's AZC innovations in their project designs.
Impacts:	<ol style="list-style-type: none"> 1) Inability to incorporate AZC innovations will almost certainly mean the project will not reach its AZC housing criteria. 2) ERDF grant funding will not be available if we cannot incorporate AZC innovations into the project.
Mitigations: (potential)	<ol style="list-style-type: none"> 1) Incorporate ENE personnel into the panel selecting the Architectural and M&E Services supplier(s) to reduce the risk of a poor fit between the selected supplier and the innovation elements of the project.

	<p>2) At interview stage, question at length the supplier(s)' (a) interest in AZC; (b) willingness to collaborate with innovators to achieve AZC housing standards and performance.</p> <p>3) Secure supplier commitment to a collaborative co-design and co-creation process at interview stage. This will mean the Architectural/M&E Consultants:</p> <p>a) Incorporating innovations emerging from and identified by ENE into designs.</p> <p>b) Liaising closely with the ENE project team from the start of the design process.</p>
Risk 2	Main Contractor appointed by CCC that subsequently struggles to deploy ENE's AZC innovations in the build phase.
Impacts:	<p>These are the same as Risk 1 (above):</p> <p>1) Inability to incorporate AZC innovations will almost certainly mean the project will not reach its AZC housing criteria.</p> <p>2) ERDF grant funding will not be available if we cannot incorporate AZC innovations into the project.</p>
Mitigations: (potential)	<p>These are the same as Risk 1 (above):</p> <p>1) Incorporate ENE personnel into the panel selecting the Main Contractor to reduce the risk of a poor fit between the selected supplier and and the innovation elements of the project.</p> <p>2) At interview stage, question at length the Main Contractor's (a) interest in AZC; (b) willingness to collaborate with innovators to achieve AZC housing standards and performance.</p> <p>3) Secure Main Contractor commitment to working with suppliers of innovative technologies at interview stage.</p>
Risk 3	Non-alignment of CCC procurement and delivery processes with ENE/ERDF innovation selection and procurement process (where ENE pre-selected innovations cannot be dovetailed with CCC pre-selected designers/contractors).
Impacts:	<p>1) Development is unlikely to achieve AZC Housing standards and performance.</p> <p>2) Developmet will not secure ENE grant funding.</p>
Mitigations: (potential)	ENE/CCC work through how these processes will work together in practice at the earliest possible opportunity.
Risk 4	Costs for the development are not spent in time to claim the ERDF grant.

Impacts:	We cannot claim ERDF grant for this project.
Mitigations: (potential)	We structure the project so that funds that we can claim grant on are spent as early as possible.
Risk 5	Procurement is not compliant with ERDF rules.
Impacts:	We cannot claim ERDF grant for this project.
Mitigations: (potential)	1) Plan as soon as possible how we intend to procure the AZC Housing Innovations for the project. 2) Run this plan past MHCLG to secure their approval for the plan.
Risk 6	University of East London internal risk management and compliance for ENE requires that we spend the grant money as soon as possible. If not, the grant money available for housing projects will be withdrawn and re-purposed.
Impacts:	ERDF grant for innovative AZC Housing projects is no longer available .
Mitigations: (potential)	As soon as possible: Timetable and budget this project so the University of East London are clear when the budget will be spent and when the grant will be claimed.

5 Further issues for discussion

5.1 Collaboration process

CCC and ENE will in effect need to become a single project team (weekly/bi-weekly meetings as the project spins up, shared document folders – what else?)

Question: How will this work? Perhaps we can agree some terms of engagement?

5.2 Selection of AZC innovations

ENE will surface innovative materials, products, processes and services that can decarbonise the construction and operation of housing through:

- 1) An innovation competition to surface consortiums capable of delivering AZC Housing as a package.
- 2) An innovation competition to surface materials, products, processes and services that can contribute to AZC Housing designs.
- 3) Research collaborations between ENE partner universities and innovator teams.

- 4) Market scanning and engagement with the construction industry supply chain (making use of prior knowledge, no reinventing the wheel).

All these innovations will be independently analysed by the University of East London's Architecture/Building Design Department, Sustainability Research Institute, energy modelling engineers and other personnel working on the ENE project.

5.3 Intellectual property

Many innovators will have working technology, but will not have patented or otherwise protected their work. To encourage collaboration, we propose all participants in the development (including CCC, Calford Seadens, the Architectural consultants, M&E services consultants and any other service provider involved) sign a Research Collaboration Agreement. This is a standard agreement produced by Innovate UK for use when working with a consortia of organisations.

ENE, and all its delivery partners, is already governed by an umbrella Research Consortium Agreement, because the project is designated as a Research Collaboration Agreement by MHCLG.

5.4 Case studies and dissemination of learning

As a research project we will need to gather information for an end-of-project case study. We will need to be able to interview all key participants, including representatives from CCC, Calford Seadens and the appointed Architectural and M&E Consultants, the Main Contractor and other services providers brought into the project.

5.5 Other

- 1) Opportunity for all organisations and companies involved to benefit from the collective resource available in this project. We are particularly keen to ensure local SMEs across the built environment supply chain (existing and new) benefit from learning and/or participation in this process.
- 2) MHCLG/ERDF scrutiny requires the safeguarding of all organisations involved through regular checks and reviews.
- 3) This project will yield significant UK wide profile for all involved and opportunity to be part of a mass market national decarbonisation solution.