



Homes of the future, now - comfortable and
affordable to heat

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Context

The house building industry is facing several key issues. The estimation of required new housing is between 232,000 to 300,000 new units per year. In order to meet Climate Change Act (CCA) commitments there is a need for these homes to be low carbon through design rather than reliant on technology and to continue to be low carbon in 2050 and beyond.

The housebuilding industry has the triple challenge of delivering more homes faster, with lower CO2 emissions, and at affordable cost. Achieving this will require innovation in every area and improved co-ordination across the traditional disciplines and construction stages.

Homes with low energy demand through their design should have reduced running costs and assist in combatting fuel poverty.



BEIS Aims

The high level aim is to gather evidence that low carbon homes can be built affordably. This will be done by:

- Understanding the demand for low cost, low carbon housing in England & Wales and the capacity and motivation within the housing sector to meet it.
- Understand the barriers faced by developers striving for low carbon homes as standard and identify evidenced ways these barriers have been overcome.
- Recommend key actions to increase demand, improve supply, and deliver housing with improved energy and carbon performance.



Scope of Study

This study will follow Partner Projects applying a variety of philosophies and approaches to achieving:

- **Low Cost:** Similar total costs to current houses being built today. Higher initial capital costs may be balanced by lower operating costs.
- **Low Carbon:** Fabric should be of sufficient thermal performance that it should not require future energy retrofits.
- **Low Living Costs:** Lower energy and operational costs compared to typical new housing



Partner Projects

BEIS are currently working with 3 partner projects however we have the scope to expand the research project to 2 additional partner projects.

Specifications for Partner Projects are detailed in the next slide with details on how to get involved at the end of the slide pack.

AECOM have been appointed by BEIS to conduct this research. AECOM are leading a consortium including experts from Pollard Thomas Edwards, Four Walls and Delta Energy & Environment.



Benefits to Partner Projects

Our partner projects will:

- Be seen to be at the forefront of low carbon housing
- Have the opportunity to showcase their developments with central government and political support
- Provided with the monitoring equipment for 10 of their homes
- Achieve a greater understanding of how their homes performance and the occupants experiences
- Receive the raw monitoring outputs for their development on a home by home basis
- Opportunity to benchmark their development against other Partner Projects
- Early access to results prior to BEIS publication
- The opportunity to build increasing trust between members of their team

Note: BEIS are not providing financial reimbursement to the Partner Projects



Partner Project Specification

BEIS are seeking for 2 additional Partner Projects, these should:

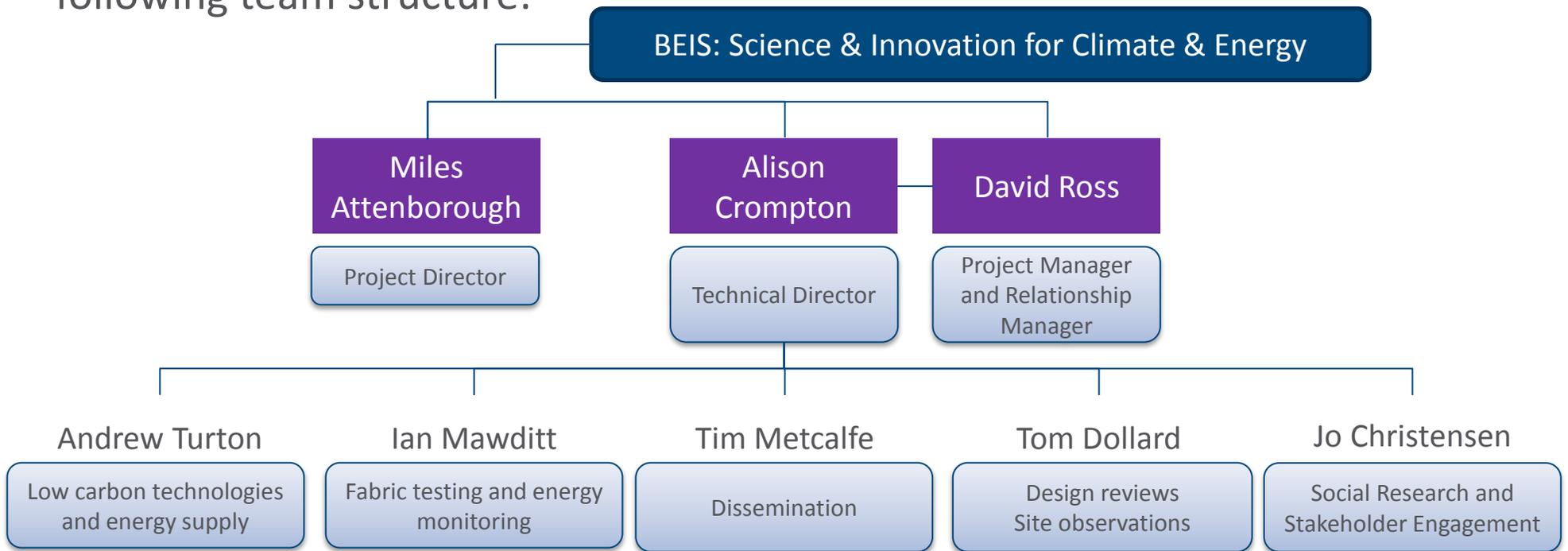
- Be defined by the housing developer as 'low carbon' homes
- Be developments of 20+, ideally 50+ homes
- Not be sold at an excessive premium to the cost of a standard home
- Be starting on site in early 2018. This could be the first phase of a larger scheme.
- Ideally be ready to hand over to occupants in winter 2018 to allow for fabric testing prior to occupancy and 1 year of occupant monitoring.

BEIS does not specify a particular archetype or tenure of the homes to be monitored



Research Team: AECOM

BEIS have appointed AECOM to conduct this research project, with the following team structure:



Case Study Monitoring & Evaluation

The research project is broken down into 4 stages:

- **Stage I** : Design and pre-build
- **Stage II** : Build process
- **Stage III** : Occupancy
- **Stage IV** : Dissemination

The actions required by Partner Projects and the responsibilities of AECOM are provided in further detail over the following series of slides, with specific requirement set out in the collaboration agreement.



Stage I: Design and pre-build

This stage aims to capture learning through design and conception of the development. The Partner Project will:

- Ensure relevant stakeholders associated with the Partner Project have awareness of their involvement in the research project
- Engage design and planning teams associated in the project, making them available for interview/focus groups
- Engage future occupants (if known) in the project to understand the perceived benefits and challenges of low cost, low carbon housing
- Share design and planning documentation with the research team



Stage II: Build process

This stage aims to capture best practice used during the build process. The Partner Project will:

- Engage those on site with the project, making them available for site interviews.
- Allow for observations to be carried out on site to identify methodologies and practices which leads to good performance throughout build process
- Make 2 homes per development available for post-construction fabric and services performance testing

Note: This process focuses at a high level not detailed working practices or instructions. Commercially sensitive information, if any, will be omitted from reports.



Stage III: Occupancy

This stage of the project will understand the energy use in homes, and the behaviours of the residents. Partner projects will:

- Support the project research team in engaging occupants in the research project
- Support with energy and environmental performance monitoring and occupancy behaviour
 - 10 homes per development
- Support with gathering occupant views across developments on key aspects of living in low cost, low carbon housing



Stage IV: Dissemination

AECOM will:

- Produce an overarching report including project findings and recommendations to advance the large scale uptake of low cost, low carbon housing
- Develop and deliver an External Communications Plan
 - Identify key audiences and their usual method of communication including any existing channels
 - Communication objectives and key messages
 - The best method and timing for any communication
- Create technical content matched to different audiences under the Building for 2050 brand



Next steps...

If you are interested in being a Partner Project:

- Please review the attached Partner Project **collaboration agreement**, identifying any amendments or concerns you have
- Complete the attached **Partner Project template** detailing project overview, specification and timeline for the development you propose

BEIS are happy to discuss ways of working with our Partner Projects, please contact Buildingfor2050@beis.gov.uk in the first instance.

