

Item

Procurement of contractor(s) to deliver energy efficiency improvements and works to reduce carbon emissions from Council Housing

To:

Councillor Mike Todd-Jones, Executive Councillor for Housing
Housing Scrutiny Committee 20th January 2022

Report by:

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Wards affected:

Arbury

Key Decision

1. Executive Summary

The Council commissioned a report in 2021 to establish a high-level cost estimate of how the Council can retrofit existing Council properties to be net zero carbon. This report seeks approval for a pilot project to retrofit up to fifty Council properties to establish the actual cost and methodology of achieving net zero carbon in existing Council properties.

2. Recommendations

The Executive Councillor is recommended to:

Approve the issue of tenders and authorise the Director of Neighbourhoods and Communities to award a contract(s) to a contractor(s) to deliver energy efficiency works and works to reduce carbon emissions from Council housing in 22/23 and 23/24, with an option to extend for one or more periods up to a maximum of two years.

3. Background

The Council's Climate Change Strategy 2021-2026 sets out *"a vision for Cambridge to be net zero carbon by 2030, subject to Government, industry and regulators implementing the necessary changes to enable the city and the rest of the UK to achieve this."*

In line with this vision and following the results of the "Achieving net zero carbon in our existing Council Housing Stock September 2021" report from Fielden and Mawson, further work is required to establish the actual costs of achieving net zero carbon in the Council's existing housing stock and the technical feasibility of various options.

The Council's current housing asset management strategy sets out objectives to improve the energy efficiency performance of the existing housing stock and to start to investigate costs and ways of achieving this in 2020/21. We are also working toward a government target to achieve EPC "C" for all our properties by 2030.

One of the key areas we need to address to achieve this target is insulation of solid walls. The Council has around 1300 properties that were built with solid walls many of which have an EPC rating of "D" where these have not been insulated.

Our current programme of external wall insulation (EWI) combined with solar PV panels has achieved EPC "B" on most properties ("C" on some). The most recent phase of this work began in September 2021 and will be delivered to the retrofit standard: PAS2030:2019.

We are continuing to develop this programme to improve solid walled and other "D" rated properties, so they achieve a minimum EPC rating of "C." However we want to do this with a "No Regrets" approach. This means we want to carefully plan work so that we do not need to return to properties in

the future and change any existing energy efficiency measures to meet net zero later.

Most of our Council properties have gas boilers for space and water heating. We are looking at replacement of gas heating systems in the longer term. In line with government advice and good practice we are planning to adopt a “whole house” approach to decarbonization and energy efficiency.

3.1 “Achieving net zero carbon in our existing Council Housing Stock - September 2021” report from Fielden and Mawson

Following a report by consultants Buro Happold showing how our new build housing could reach net zero carbon (the “Passivhaus” standard is being adopted for all new build housing from 2024), consultants Fielden and Mawson were appointed to deliver a report for our existing Council housing stock.

Fielden and Mawson’s report made recommendations for measures that could be used to achieve net zero carbon in the Council’s existing housing stock and included high-level cost estimates for our most common housing archetypes (covering most of our stock). The estimated costs and housing archetypes are shown in the table below:

Archetype	Description	Estimated cost to achieve net zero (over and above Decent Homes standard) including all fees, design costs and contingencies
1	2-bed maisonette	~ £61,000
2	1-bed low-rise flat	~ £66,000
3	1-bed medium-rise flat	~ £56,000
4	1-bed post war bungalow	~ £79,000
5	2-bed pre-1945 semi	~ £101,000
6	2-bed post-1945 semi	~ £87,000
7	2-bed post-1945 Victorian end terrace	~ £82,000

Note regarding costs for different archetypes

Typical properties in the Council’s existing housing stock were used for estimating costs for each archetype. The biggest variable is insulation of the building fabric and this varies according to the area of external wall to be treated. For archetype seven internal wall insulation is proposed and this reduces the estimated cost.

Our proposed plan is to develop and deliver a pilot project of around fifty properties that will test the proposals in the Fielden and Mawson report.

The pilot project will aim to transform EPC “D” rated houses to “net zero carbon” standard (or as close as can be achieved) using a whole house approach to retrofit that will comply with the PAS 2035 standard (PAS 2035:2019 Specification for the energy retrofit of domestic buildings).

The pilot project will focus on a street approach to “Archetype 5” properties (two-bed, pre-1945, semi-detached houses) however additional archetypes will be included where possible.

The pilot project will allow us to verify the assumed costs, fees, and contingencies in the Fielden and Mawson report and to also identify any unforeseen difficulties delivering a whole package of measures in occupied properties.

The results from the pilot project should place us in a strong position to make informed decisions about the rest of our housing stock in future and develop designed solutions that can be replicated for future energy efficiency and decarbonization works on the Council’s existing housing stock.

As part of the development of a full design, embodied carbon (carbon footprint of a material) will be assessed, and materials incorporated to minimise or reduce the embodied carbon impact of the project.

3.2 Proposed retrofit measures and estimated costs for two-bedroom, pre-1945 semi-detached house

The planned package of retrofit measures as recommended in the Fielden and Mawson report include (subject to full design):

- External wall insulation (EWI) with air tightness improvements (using “EnerPHit” retrofit method, equivalent to “Passivhaus”)
- Solar Photovoltaic (PV) panels
- Replacement doors and windows within the insulation zone
- Air source heat pumps (ASHP) to replace gas boilers (or make properties ASHP ready)
- Hot water cylinders
- Mechanical ventilation
- Underfloor insulation (where possible)
- Loft insulation top ups

Measure	Estimated cost of retrofit work required based on Fielden and Mawson report
External Wall Insulation	£22,000
Perimeter insulation (below DPC)	£10,300
Roofline works	£7,200
Triple Glazing / Doors	£10,000
Solar Photovoltaic panels (PV)	£6,800
Mechanical Ventilation and Heat Recovery	£1,500
Scaffolding / Access	£3,500
Render	£4,800
Air source heat pump	£7,500
Works estimated sub total	£73,600
Preliminaries, overheads and profits, professional fees	£28,530
Contingency	£10,060
Total - works and fees	£112,190
Inflation to 3Q21 to 3Q 2022 @4.7%	£5,609
TOTAL – works, fees and inflation	£117,799 per property

Notes on estimated costs

Total estimated cost includes cost of retrofit works, contractor's costs, design costs and contingency based on September 2021 costs and inflated to 3rd quarter of 2022.

Tender prices are currently volatile and unpredictable, and the project may be affected by labour and material shortages.

The actual contract sum will be agreed following the completion of the design and tender process. This may also include other planned maintenance works that may be carried out at the same time.

4. Implications

a) Financial Implications

A £5m budget for a net zero carbon pilot project is already included in the housing capital investment plan for 2022/23 (in addition to an existing allocation of £1m for energy efficiency works). It is likely that delivery of the project will extend into 2023/24 so the capital budget will need to be re-phased to take account of the actual delivery programme.

The cost of any other planned maintenance work that can be scheduled to take place at the same time as retrofit works (e.g., electrical work, roofing work) can be met within the existing housing capital investment plan.

b) Staffing Implications

The work will be managed by the Estates and Facilities in house team, supported by external consultants as required.

The Council's legal team and Corporate Procurement Manager will provide contract and procurement advice.

City Homes staff will be involved with planning and consultation processes.

The Council's Climate Change team in Corporate Strategy will be involved with the project.

The Council's Environmental Quality team dealing with private sector retrofit projects will be involved with the project.

c) Equality and Poverty Implications

An Equality Impact Assessment has been completed.

The works will improve the energy efficiency of Council houses and should result in lower energy bills for tenants.

d) Environmental Implications

The Council's climate change rating tool has been completed to assess the environmental implications of this proposal.

The assessment is that there is positive net overall impact.

e) **Procurement Implications**

Works

Routes for procurement are currently being explored with options including:

- Existing frameworks contracts
- Conducting a full competitive tender, likely to be subject to public procurement regulations

Additional services to be procured include:

- Architect services
- Cost consultancy services
- Retrofit coordinator services
- Other specialist professional services

f) **Community Safety Implications**

N/a

5. Consultation and communication considerations

All residents affected by this proposed project will be informed about the proposed work and the potential energy, carbon, and financial savings.

Detailed consultation will be carried out before work starts including:

- an on-site resident consultation day to give information about the proposed work and collect feedback and comments
- personal visits to each resident to explain the work and identify any special requirements
- information and support in the use of energy efficiency measures

Estates and Facilities will work closely with the Environmental Quality team who are developing strategies for private sector housing.

A planning application will be required as the work will result in a change of appearance to the properties.

Party Wall notices may be required where Council properties adjoin freehold properties.

Glossary

<p>Net zero carbon</p>	<p>Net zero carbon means that carbon emissions cannot exceed zero. In practice, a net zero carbon target means that in addition to phasing out fossil fuels and the role of renewable energy and energy reduction measures, there is also a role for balancing a certain measured amount of carbon released with an amount of carbon offsets, though, for example, tree planting or carbon capture and storage.</p> <p>(Definition taken from North East Cambridge Area Action Plan)</p>
<p>EPC</p>	<p>Energy Performance Certificates are needed whenever a property is: built, sold, or rented and are valid for 10 years.</p> <p>An EPC contains information about a property’s energy use and typical energy costs and recommendations about the measures that can be installed to reduce energy use and save money.</p> <p>Energy Performance Certificates tell you how energy efficient a building is and give it a rating from A (very efficient) to G (inefficient). They tell you how costly it will be to heat and light your property, and what its carbon dioxide emissions are likely to be.</p>
<p>PAS 2035</p>	<p>PAS 2035 is the Publicly Available Specification that covers all retrofit energy efficient enhancements to the UK’s existing housing stock.</p>

	<p>PAS 2035 is an over-arching document in the retrofit standards framework introduced following the recommendations of the Each Home Counts review. PAS 2035 provides a specification for the energy retrofit of domestic buildings, and details best practice guidance for domestic retrofit projects.</p> <p>Any retrofit designs that emerge from its specifications must be installed in accordance with the requirements outlined in PAS 2030.</p>
PassivHaus	<p>Passivhaus is a quality assured standard and methodology for low energy building.</p> <p>Passivhaus design seeks to eliminate the need for space heating and cooling and is based on the principle that reducing heating loss to a minimum is the most cost-effective and most robust way of achieving a low carbon building. Passivhaus design relies on maximising the use of super insulation and stringent airtightness and paying meticulous attention to the removal of thermal bridges. By combining this with passive solar gain and mechanical ventilation and heat recovery systems, Passivhaus design can create healthy, comfortable buildings needing minimal heating.</p>
EnerPHit	<p>EnerPHit is a slightly relaxed Passivhaus standard for retrofit projects, where the existing architecture and conservation issues mean that meeting the Passivhaus standard is not feasible.</p>
Retrofit Co-ordinator	<p>Retrofit Co-ordinators are required for all domestic retrofit projects to comply with PAS 2035. The Retrofit Coordinator is a project management role within the</p>

	retrofit process. They are responsible for overseeing a domestic retrofit project from inception to completion, and will liaise with building owners, and other retrofit project stakeholders in order to ensure effective project management.
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6. Background papers

“Achieving net zero carbon in our existing Council Housing Stock September 2021” report from Fielden and Mawson

Cambridge City Council – Interim Sustainable Housing Design Guide
Four Steps to Zero Carbon – report by Buro Happold
7 May 2021 - Revision P05

Cambridge City Council Climate Change Strategy 2021-26

7. Appendices

None

8. Inspection of papers

To inspect the background papers or if you have a query on the report please contact Will Barfield, Asset Manager

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or

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