COMMUNITY HEAT DEVELOPMENT PROGRAMME

INITIAL REVIEW

Forres Community Heat Network

Version 4: October 2023

Project reference No: 1236.012

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1 Introduction

1.1 Who Has Provided This Initial Review

The Scottish Government's '*Community and Renewable Energy Scheme*' (CARES) supports communities to engage with, participate in and benefit from the energy transition to net zero emissions. CARES is managed by Local Energy Scotland.

As part of that transition, the Government has asked Local Energy Scotland to set up and deliver a '*Community Heat Development Programme*' (CHDP). The recently established CHDP offers bespoke free and impartial technical advice to *community groups* and *groups of householders* seeking to decarbonise their heating. That advice is provided by Reheat Ltd (www.reheat.uk.com). Reheat has prepared this initial review.

1.2 Scope Of This Initial Review

This review provides an initial assessment of the scope for the Forres group to collectively change their heating system from what is assumed to be mains gas to a low carbon communal network solution.

This review is based on the information supplied to us in the CARES CHDP 'Application Form' and 'Participant Questionnaire', and a half hour call with Andrew McGhee who acts as representative of the Forres group. At this stage, a site visit has not been undertaken to inspect the heating systems, measure floor areas or evaluate building fabric of the properties; nor have individual energy bills been collected or analysed.

This review considers; the capacity of the community group to deliver the project, the buildings and settlement, and a high-level assessment of the technologies the Forres Community Heat Network might deploy to achieve its aims. It sets out areas of funding and policy support that might be available to Forres and the suggested next steps in the CHDP process if the project is approved by LES.

2 Project Overview

2.1 Background

The town of Forres within the council area of Moray is a mixture of private housing and council owned, with a number of commercial and public buildings. Leading the project is a member of the community, Andrew McGhee, who has contacted people within his

locality. The project's ambition is to reduce CO_2 emissions from residential, community and council buildings in Forres in a way that is sustainable and financially competitive.

The location of Forres in Moray:

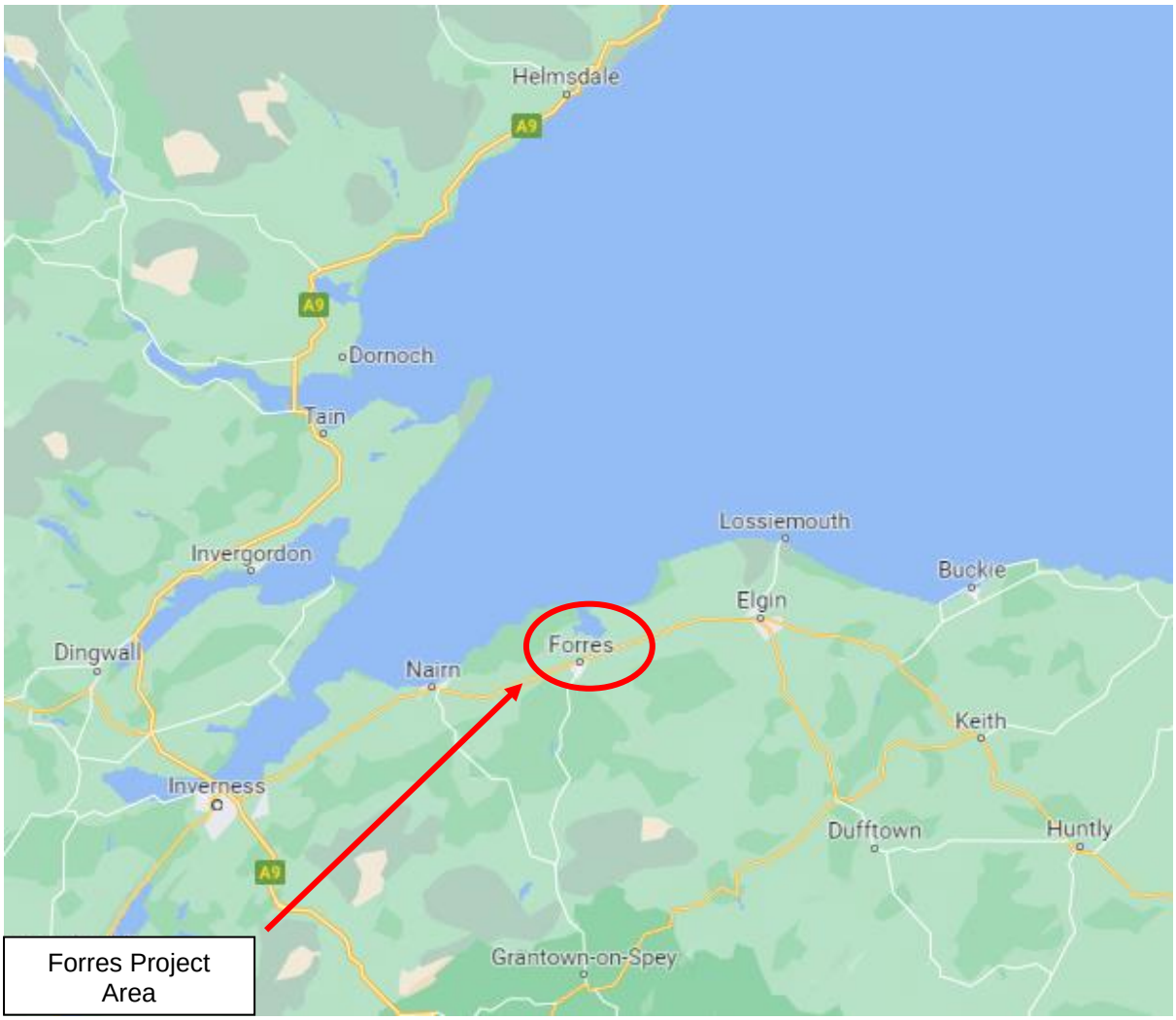

Figure 1: Site Location

2.2 The Community Group

The community group for the proposed local district heating scheme is newly established. It was started by one person who contacted each of their neighbours to generate interest and achieve buy in.

2.3 Community Engagement

The current project lead has made successful attempts to engage with a number of potential stakeholders to the project. This includes a letter drop to 43 houses in the

community and email contact with the Climate Change Officer at Moray Council to gauge their interest in decarbonising the council's facilities in the town.

Initial engagement with residents and businesses has been positive with a high level of interest from people keen to reduce their carbon footprint and energy costs in all possible ways.

2.4 The Community Buildings and Land

The proposed district heating network area contains approximately 50 domestic properties across Forres but could be extended to include neighbouring areas and buildings. It is currently envisaged that to begin with the public and commercial buildings will include:

- Library and Community Centre
- 3 schools
- Swimming pool, gym and hydrotherapy centre
- Multiple small and medium business units
- 1 church

The domestic properties, which are the focus of the original proposal, are primarily owner-occupied houses. They are a mixture of detached and semi-detached stone-built buildings, mainly from the 19th to 20th centuries. The remainder of the houses are of more recent construction, approximately in the 1960s.

Current issues in Forres Academy with reinforced autoclaved aerated concrete (RAAC) mean that construction of a new school is a council priority. There is potential for the community heat network project to be undertaken alongside this, using the school's footprint to host an energy centre. This will be investigated further at feasibility stage and presents an interesting opportunity.

There are no obvious issues with the buildings or site layout at this stage that would suggest a community heat network would not be technically viable. It is always good practice to examine opportunities for improving energy efficiency, and for some low carbon technologies it can be essential. Whether or not any improvements to the energy efficiency of the homes and properties would be desirable will be assessed at the Feasibility Study stage, along with considering how a communal, coordinated approach may be achieved.

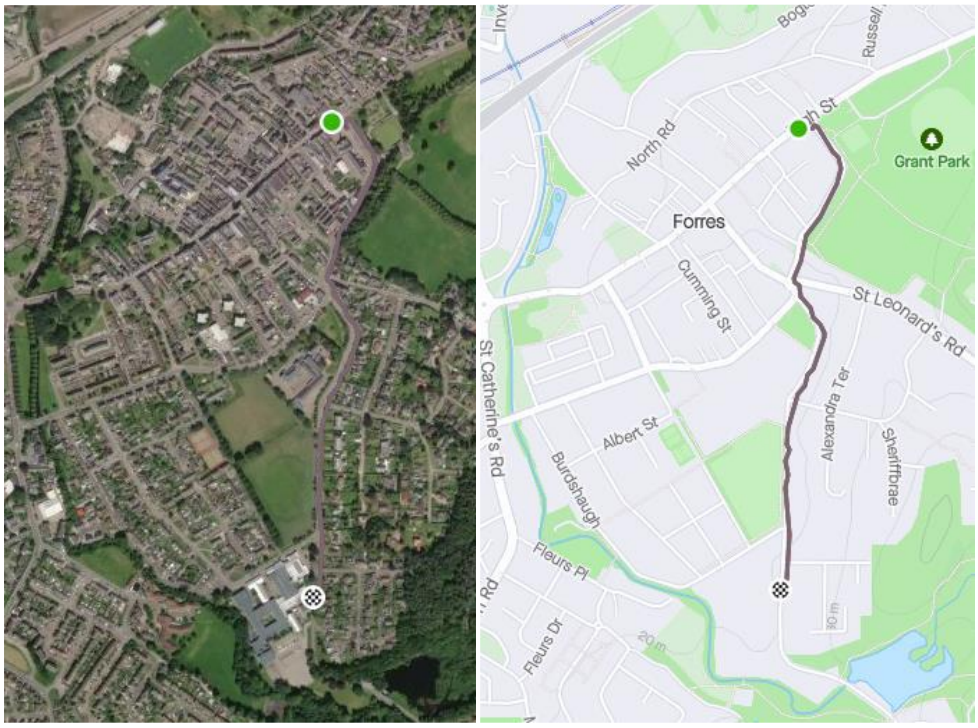

Figure 2: Proposed location of district heating network in Forres

2.5 Existing Heating

Mains gas is available within the town, so it is assumed at this stage that most, if not all properties currently use this for their heating and hot water requirements. Some solar water heaters and log burners are also present in the community, in individual properties.

Should the project progress to feasibility study stage the community will be asked to administer an Energy Survey which collect more accurate data on existing heating.

3 Opportunities for Low Carbon Heating

3.1 The Communities Proposed Solution

The solution proposed by the community is a biomass fuelled heat network. There are suppliers of woodchip in the local area and the proposed route would support it.

Alternative heat network solutions proposed are a water source heat pump from Mosset Burn but it is unknown at this stage if the water flow and temperature would be suitable for this. Waste heat from a local distillery might also be included but a distance of 1km from end users may prohibit this.

3.2 Technical Considerations

Through our desk-based review of the site we have not identified any immediate technical barriers to the development of a district heat network for Forres.

Subject to detailed calculations on heat loss and economics, the area looks to be very well suited to the installation of a district heating network or shared loop system due to the presence of a number of potential key anchor loads in public and commercial premises along the proposed spine of the network. There are no major geographical features that might present barriers to scheme development.

A community heat network as proposed would require houses to have a wet central heating system (i.e., radiators fed with hot water). At this stage it has been assumed the vast majority of properties are on mains gas and will therefore already have wet central heating systems installed.

The feasibility study will investigate the suggested biomass fuelled heat network and water source heat pump; however, we will also highlight any other potential options if we identify any that may be a better solution from either a technological or economical point of view.

At some point, probably within the next 10 years, it will no longer be permitted to install a new gas boiler (see page 7 for further details). Consequently, remaining on gas is not considered to be a long-term option. Therefore, in order to provide a counterfactual to a community heat project, the study will also provide a high-level assessment of individual ASHPs, including the average cost per house and other key considerations.

3.3 Potential Community Capacity to Develop the Project

Through our desktop review, we have not identified any community capacity barriers to the development of a low carbon district heating scheme. Although there is no formally constituted organisation at this stage, this is not a barrier to developing the project but is something which would need to be considered and created should a potential project be technically viable.

The group has already undertaken some engagement with their community, and it should be noted that effective and comprehensive community engagement from this stage onwards will be critical to the long-term success of any community heat project.

For a project of this scale and complexity, significant support and capacity building within the community will be required if it is to be a success. The Forres project is an

exciting and ambitious project that will need to be developed and delivered over the coming years, requiring a significant long-term commitment from those involved.

3.4 Financial and Carbon Impact

We believe there is a good prospect of a solution that will significantly lower CO_2 emissions compared to business as usual on gas. Biomass fuel is considerably cheaper than gas per kWh, however the final price of delivered heat to the consumer is not known at this stage as other costs such as repayments on loans, billing and metering, insurance etc need to be included and a detailed business model developed.

It is also not possible to provide any indication of capital cost at this stage.

3.5 Funding

The funding sources available to deliver a project for Forres will be identified more accurately at the Feasibility Study[1]. Irrespective of which funding route is identified as most appropriate, the project would need to meet the relevant eligibility criteria of the chosen scheme/s.

3.6 Policy

The '*Scottish Climate Change Act 2019*'[2] set legally binding targets to achieve net zero greenhouse gas emissions by 2045, with interim targets requiring a 75% reduction by 2030, and 90% by 2040.

In 2021 the Scottish Government published a '*Heat in Buildings Strategy'* and set out the following objective:

> *'To meet our net zero target, by 2045 all homes and buildings in Scotland must have significantly reduced their energy use, and almost all must be using a zero-emissions heating system. As set out in the Climate Change*

[1] Should the project be approved by LES to move to the feasibility stage.

[2] https://www.legislation.gov.uk/asp/2019/15/contents/enacted

Plan…emissions for homes and non-domestic buildings combined will have to fall by 68% by 2030 as compared to 2020.'[3]

The Government is planning to introduce legislation during this Parliamentary term to require the installation of zero or near zero emissions heating systems in *existing buildings* – in both the domestic and non-domestic sectors. Relevant to this project, the legislation will include:

Phasing out fossil fuel boilers in all domestic properties:

Phasing out the need to install new or replacement fossil fuel boilers in off gas properties from 2025, and in on-gas areas from 2030[4]*. The Government will consult on these proposals regarding the trigger points, however they expect to propose that the regulations will be triggered by the replacement of an existing heating system as a minimum.*

Reaching EPC C for Owner-Occupied Private Housing:

We will set out and consult on detailed proposals for introducing regulations for minimum energy efficiency standards for all owner-occupied private housing. It is envisaged that these will be set at a level equivalent to EPC C where it is technically feasible and cost-effective to do so. This will apply at key trigger points. We propose to introduce regulations from 2023-2025 onwards, and all domestic owner-occupied buildings should meet this standard by 2033.

4 Next steps

This Initial Review will be assessed by LES against their approval criteria. If the required score is met, your project will move to the Feasibility Study stage. You will have been notified of whether or not your project has been successful when you were issued with this Initial Review document.

If your project **has not been approved** for feasibility study: LES will provide you with signposting to alternative support.

[3] Scottish Government (2021) Heat in Buildings Strategy, page 12.

[4] Scottish Government (2021) Heat in Buildings Strategy, page 94-95

If your project **has been approved** to move to the Feasibility Study stage:

1. Community Agreement to Progress to Feasibility Study Stage

You will be asked by LES for your agreement to progress to the next stage. If you agree, Reheat will undertake a feasibility study. The next steps will be:

2. Energy Survey

You will be asked to administer a detailed energy survey amongst the residents (provided by Reheat). We will provide advice and support as to how to do this and an indication of the number or percentage of households you will need to reach. A date will be agreed by which you will have collected the required information.

3. Feasibility Study Preparation

Once the site visit is complete and the energy data has been collected, we will undertake the study over a period of 3 to 6 weeks from that deadline, although the timescale for more complex district heating schemes may be longer if liaison with key stakeholders is required.

The study will help you understand the proposed project and set out how you can plan and deliver the project. The exact scope of the study will be finalised with you after the site visit and will be dependent on the nature of your project but as a guide the study is likely to provide the following outcomes:

1) Analysis of energy data and modelling of heat requirements.
2) An outline design for the proposed low or zero emissions system(s).
3) Measures required to improve energy efficiency in the building(s).
4) Any opportunities to include low carbon power such as PV/battery storage.
5) Disruption impacts of the proposed works.
6) A pre-tender budget of the capital costs per household and/or per project.
7) An estimate of the future operating costs of heating compared to business as usual (BAU).
8) An estimate of future CO_2 emissions (compared to BAU) in kg/CO_2 per kWh.
9) An estimate of the costs of making the CO_2 savings enabling like for like comparisons with other projects (expressed in £/ kg/CO_2).
10) A statement on how the project addresses fuel poverty.
11) Legal/commercial and contractual recommendations such as the need for heat supply contracts, service, and maintenance contracts.

12) Advice on ownership models, establishment of community entities and an assessment of financial and other benefits that could be generated for the community.
13) Sources of support, finance, and grant to help deliver the project.
14) A just transmission assessment.
15) How the project will contribute to Net Zero and policy objectives.
16) A narrative on the risks and uncertainties.
17) A narrative on how the project can be planned and procured and guidance on installers and contractors, with specification information for tendering.
18) Next steps and an implementation programme.

4. Project Development Meeting

Once you have received the Feasibility Study, we will run an online project development meeting for the community which will include training session on the report findings and an opportunity to ask questions.