

# **Grantchester Heat Network Initiative**

## **Invitation to Tender (ITT) for Stage 2 Study to be funded by Community Energy Fund (CEF) *Funding has been granted***

### **1. Request for Tender**

The historic village of Grantchester lies 2 miles South West of the City of Cambridge and within the District Council of South Cambridgeshire. The village sits above the River Cam at the southern end of the water meadows, and entirely within the Cambridge Green Belt and the QTSQ (Quarter To Six Quadrant) - the rural area lying immediately to the south and west of Cambridge, a mile or two from the built-up edge of the City. South Cambridgeshire District Council designated the QTSQ as a Major Green Infrastructure Target Area.

The village comprises c.270 households and a population of about 600, with 4 pubs/restaurants, a gin distillery, dog grooming parlour, graphic design firm and the renowned Orchard Tea Rooms. The village has no school or shops, but still has a thriving community that live and work within the village, in Cambridge and beyond.

A successful feasibility study run by Scene Connect (RCEF Stage 1) found that a River Source Heat Pump-powered high temperature district heat network would be able to support 90% of the village's heat demand, with industrial Air Source Heat Pump(s) as a backup and 'peaking' solution. This project was found to be technically and financially feasible. This Stage 2 project is intended to further develop the plan in order to progress stakeholder and household agreement, and take the project towards Green Heat Network Fund (or other relevant funding) support.

The homes in Grantchester have no access to gas for heating and so many rely on oil, calor gas or direct electric heating. The Parish Council have established a Grantchester Climate Change Action Committee (GCCAC) in order to explore all avenues for reducing the impact of the village on the climate and biodiversity emergency and this group is the team that will manage this tender process and the Stage 2 project.

The area to be covered by the study lies within the village envelope - as defined by the SCDC adopted local plan. This comprises approx. 270 homes of which approx:

- 53% of properties in Grantchester are owner-occupied, (cf. Cambs village average of nearer 80%)
- 27% of properties are socially rented (cf. South Cambs average of 14%)
- 18% of properties are privately rented
- The remainder are shared ownership or living rent free.

The Commissioning Organisation for this Stage 2 study will be the Grantchester Parish Council, and it is envisaged that, if implemented, the scheme will be owned and managed by a specially formed organisation such as a Community Land Trust (the creation of which is expected to be part of this Stage 2 process.)

Our initial thoughts about the scope and nature of a village-wide renewable heat network are informed by the local exemplar at Swaffham Prior, advice from the local Energy Hub, and the professional experience of members of GCCAC.

It is proposed that tender documentation will be issued on 21st May 2024 with a return date of 12th June 2024 by 6pm. We already have funding confirmed by CEF for Stage 2, so we would hope to get the project underway by the end of June 2024.

## 2. Scope of works

The Parish Council wish to appoint a suitably qualified organisation or consortium, on a consultancy basis, to deliver a feasibility study compliant with CEF's Stage 2 feasibility approach for renewable technologies, for a potential heating network for Grantchester. The study should assess the following requirements related to the project:

### 1. Technical:

The tender should allow for completion of the technical design for a heat network for Grantchester including, but not limited to, the following tasks:

#### A. Comprehensive review of the Stage 1 Report

Including **either** validation and adoption of the calculations and conclusions **or** identification of alternative, more-viable, solutions. The review to cover:

- i) Demand. The Stage 1 study used a limited number of housing archetypes and actual energy bills to identify peak and average heat demand figures.

The review should evaluate the statistical accuracy of this figure and, where necessary augment this with refinement of the archetype analysis and additional consultation with residents to source actual heat energy usage.

- ii) Primary heat source – capacity, location, and viability in terms of planning and conservation. Need for and form of alternative ‘back-up’ primary heat source or level of redundancy/resilience in primary source.
- iii) Energy Centre – location, proximity to heat source, and viability in terms of planning and conservation.
- iv) Network distribution temperature – high or ambient temperature distribution - balancing theoretical energetic efficiency (and minimum household disruption) of high-temperature distribution against the higher installation costs and the potential for an ambient-temperature to allow option for residents to use a domestic water source heat pump (and electrical supply) to create their desired temperature. It is suggested that the direct linkage between temperature and bills will better encourage adoption of behavioural and insulation/retrofit measures to reduce heat demand, but this needs to be balanced against the likelihood of customer uptake.
- v) Capital costs – particularly upfront costs.
- vi) Potential to phase delivery of the project – either by splitting network into smaller (linked?) networks or by continuous, managed extension.
- vii) The possibility for the system to supply cooling to village properties, eliminating most air conditioning power consumption and accept waste heat from air conditioning or other cooling loads; relevant customers will be identified during the project

## **B. Detailed Design of Heat Network**

Including details of:

- i) **Primary Heat Source:**

It must be confirmed by the contractor that the River Cam represents the most energetic and cost efficient solution and that consultation with the Environment Agency, land owners, planning and conservation agencies has confirmed that the required interventions into the landscape to create river input and discharge points (with associated filtering and pumps) could be consented. Following this ‘gate’, the contractor will complete a detailed desktop Hydrology study of the river, including evaluation of its flow rates, temperatures, options for controlling flow rate in various tributaries to the main river, advising on the sizing and siting of the initial intake and discharge points. Contractor will also comment on regulatory issues related to water extraction and reinjection.

If objections appear too overwhelming to the river source option, contractor should propose and develop an alternative option (bearing in mind the analysis already developed in Stage 1.)

ii) **Power and water flow rates**

Contractor will provide estimates for the electric power and water flow requirements for user heat pumps with a range of capacities at a range of options for network distribution temperatures. The contractor will evaluate overall power and water flow requirements for the identified demand across the whole village.

iii) **Network study**

Contractor will create a cost base for piping (various diameters and for alternative distribution temperatures) and installation (trenching, connection and backfill, assuming a two year programme) and individual property connection cost, both at time of trenching and after backfill.

Conceptual designs for both an initial verification project and a subsequent large scale build out will be developed and design parameters including water temperature, pipe sizing and pumping requirements will be optimised to minimise lifetime cost.

Higher delivery temperatures will reduce individual heat pump power consumption and should increase revenues from consumers. Insulation thickness for the warm side piping will be optimised for the “above ambient” option should it prove advantageous.

iv) **Project economics**

Contractor will develop a simple economic model (no tax, no financing, no inflation), of the phased development, which would enable the estimation of fixed and variable costs per user and test and confirm that these are less than those of the high temperature network designed in the phase 1 study and competitive with or better than the cost of a “do nothing” option, in which individuals install their own air source heat pumps. Costs and benefits to the user for each option will be assessed. The rate of progress to decarbonisation/impact on the number of homes decarbonised will be assessed for each of the three cases. The base economic model will be used to optimise the project design and schedule and will form the basis of a more sophisticated financial model.

v) **Local power network constraints**

Contractor will confirm that the local power distribution network can handle the simultaneous operation of the heat pumps or provide an estimate of the modification activities and costs required to permit this. The consultant will interact with the local DNO, once heat pump

capacities are understood, to determine what, if any network upgrades are required.

The potential for DNO approval for the scheme should be assessed and DNO online tools used to flag whether the generation system may need to operate with constraints.

### **C. Output and final system design recommendation**

Planning requirements and potential restrictions (including capacity, local residents, and planning) should be highlighted so a clear roadmap is created. Potential locations for one or more heat pumps must be identified should they be desirable as part of the final scheme.

The Technical Feasibility Study report should be summarised and a clear set of conclusions reached on the viable option. Options should be clearly summarised and the benefits of each option identified with respect to:

- Capital Costs
- Operating Revenues/Costs
- Local and national power grid impact
- Return on Investment based on a community energy model, with external government or private financing of some of the investment
- Carbon reduction

## **2. Economic and Financial**

On the basis of this technical appraisal the study is to look at the economic viability of each possibility factoring in all the costs of both the common infrastructure and for the property owner.

This work needs to determine the breakeven number of properties that would need to be connected to the system in either case assuming that payments by the property owners to the heat network company would be no more than (and ideally less than) those incurred with individual oil-fired systems.

The study should also identify the capital costs that would be incurred by property owners in either case. The consultant should also determine how the two water temperature options would impact the ability of the system to serve outlying properties and provide clear maps that show service areas vs the village curtilage.

In summary, the Economic element of the study should identify:

- The potential development and operational cost of the project with 'project' and 'last mile' costs identified separately. Operational costs should include electricity or other energy sources, management, operations and billing, maintenance and repairs. The report needs to provide a clear economic evaluation of the relative benefits of all the

scheme options (including land purchase with a valuation of any land, public or private, based on its economic use value to the project).

- For each housing archetype the expected impact on annual heating bills should be evaluated and presented.
- Assess the impact of the optimal temperature of the distribution system on costs and the number of houses that would need to sign up for the project to breakeven.
- Identify the most suitable funding sources for this project and outline what would be involved in accessing these funds, clarifying whether such sources can include 'final mile' costs
- Quantify the relative benefits of any funding route, for example grants vs. financing products, and propose a recommendation to Grantchester Parish Council
- Calculate the key financial parameters for the project that could be used to support funding including, but not limited to; net present value over system lifetime and any other relevant timescales, payback period and return on investment, internal rate of return and cost of carbon savings
- Identify the key sensitivities for the project.
- Assess the long-term cash flows including the need for replacement of the major components.
- Present the financial evaluation of the project to provide a clear business case with supporting rationale for review by decision makers, and communication to other stakeholders, e.g. prospective funders or energy clients.
- Present a 'do nothing' case for the village including an assessment of the impact of potential future carbon taxes on heating costs using oil fired heating.

The **financial model** should expand the simple project cost/economics model to a financial grade investment model, which would include tax, desired equity IRR, public and private investment, grant funding, debt interest rates and inflation. It will cover the project economics of a phased scheme, flexing buildout route, configuration and timing, while reviewing user standing and assessing variable charges to help achieve the desired project equity IRR and level of debt interest rates.

A full **business plan** should be produced, to GHNF specifications to enable further funding discussions. Other sources of funding should also be identified.

### **3. Community and stakeholder engagement:**

The consultant will take primary responsibility (with logistical assistance from the Parish Council and GCCAC group) for community engagement issues directly related to the Feasibility Study and will give best practice advice to the Parish Council who will need to continue the community and stakeholder engagement beyond the scope of this Stage 2 study.

On the ground volunteer support will be managed by the Grantchester Climate Change Action Committee. The consultant should support at least one public meeting by presenting their findings in a suitable non-technical presentation that details the benefits and costs for each of the house archetypes whilst providing an overall summary for the village.

We recognise that the work required for different properties to connect to the heat network will differ, depending on the type of heating currently in place, the ownership of the property and the type of construction and level of insulation in place. Because of this, we anticipate a need to customise information and also the consultation process to make this relevant to different groups of residents.

The consultant might also support the Council by preparing a questionnaire that can be completed either online or on paper that can be used to evaluate community support for the project (and gather data to support the study as needed).

An understanding of how many properties are open to moving forward will be necessary, and the tender response should indicate how the consultant proposes approaching this issue.

For this project to succeed, there are a number of key stakeholders whose support will be important to secure. The contractor will need to work with the Parish Council on this. Key stakeholders include:

- King's College (Landowner of much of the land around Grantchester)
- Trumpington Farm Company (Tenant of Kings College for land around Grantchester)
- South Cambridgeshire District Council (SCDC - Owner of social housing in the village)
- The Environment Agency (Stakeholder with regard to water extraction from the River Cam)
- Cambridgeshire County Council (who are creating a Local Energy Action Plan)
- Greater Cambridge Shared Planning (GCSP - planning authority)
- Cambridge and Peterborough Combined Authority (the mayor's team, who also have an environment brief)
- Historic England (should there be any involvement with the Scheduled Monument at Manor Farm, one of the proposed sites for an Energy Centre)

#### 4. Legal:

For now, the Parish Council is responsible for defining the operational and governance models for the project. The Consultant should identify the possible forms of governance of an appropriate organisation to manage the project - Community Land Trust or other - including draft forms of constitution, etc.

The legal work required also includes permitting and creating Agreements (Heads of Terms) for use with suppliers, landowners and prospective customers. The tender should indicate the extent of legal work anticipated.

If consultants wish, there is the opportunity to exclude legal work from the tender, beyond an appraisal and recommendation of the governance options. If this is the case, the Parish Council will need to reserve some funds for this work and tenders may wish to take this into account in their pricing.

#### 5. Risk Register:

A summary risk assessment should be undertaken and a risk register maintained, covering the development risk, any technology or operational risks and the financial risks relating to the operating revenues/costs. Public perception and acceptance risks should also be considered. This will feed into the community engagement element of the project.

### 3. The Consultant

The consultant should be suitably experienced and qualified.

To this end the tender submission should contain details of:

- **Company experience:** evidence of previous work delivered in a similar field.
- **Individuals working on the project:** A demonstrable track record of experience and/or qualifications in the relevant field is required. This may be demonstrated by their professional accreditation, CV, case studies, testimonials etc.
- **Financial modelling experience:** Assurance that the tenderer has appropriate financial experience to put together the required financial plans required for the project.



- **Professional Indemnity:** Professional indemnity insurance of at least £1m.
- **Public / Employers liability insurance:** Details of the level of insurance carried are required. Public liability insurance should be a minimum of £5m.

## 4. Work Plan and Method Statement

A work plan and method statement should be provided as part of the tender submission describing how the consultant will structure and undertake the deliverables set out in the scope of works. Any inputs required from the client (exp. Data) can also be included here.

The method statement may include a statement on how the consultant will propose to manage health & safety and the community in undertaking this consultancy.

The method statement should clearly identify the consultants personnel that will be involved in delivering this project along with identification of any sub-consultants that the consultant proposes to employ in carrying out the works (and the proposed areas of work for which any subconsultants will be responsible).

The method statement should include proposals for online file sharing and access to this for the GCCAC Group.

## 5. Price

Tenderers may:

- Provide detailed costing for all activities in the scope of works. Project costing should be clearly broken down by project tasks. The proposal should include the cost of attending any meetings to kick off / present the conclusions from the work.
- Make clear whether all aspects of the tender will be covered, or whether they are applying for just one or more of the four areas (Technical, Economic, Community, Legal). As noted above in section 2.4 there is the option to exclude legal work, beyond a recommendation for a governance structure.
- Propose an invoice structure and payment terms for the project.

- The tender is to be regarded as fixed price for the scope of works detailed in the submitted work plan. However, in case the scope changes substantially, a day rate for those individuals delivering the tender should be included in the proposal.

In addition to the consultancy costs covered by this tender process, the Parish Council wish to retain (from the overall Stage 2 funding) a contingency sum for other costs and for legal costs if these are not included in the tender.

Excluding legal costs and our own project management costs, we are looking for bids around £80,000.

## **6. Management of the work**

The consultant should issue a fortnightly progress report by email to the Parish Council during the works. Meetings and/or conference calls will be arranged as identified by either the client or consultant.

The client lead contact is:

John Hammond (Parish Clerk and CEF Stage 2 Project Manager)

Email: [clerk@grantchester.org.uk](mailto:clerk@grantchester.org.uk)

## **7. Data protection**

It is expected that the winning bidder will operate under standard GDPR regulations.

## **8. Conflict of Interest**

The Tenderer should indicate how any conflicts of interest which might arise if selected to undertake this work would be identified and if such a conflict were to arise how this conflict would be addressed.

## **9. Tender assessment.**

Tenders will be assessed by considering the following and awarding points on a weighted basis. We reserve the right to request a virtual interview as part of our assessment process.

1. Project Team - Company	
Criterion	Weighting
Insurance requirements as detailed in section 3	Pass/Fail
Relevant company and project team experience as set out in section 3 of this ITT.	20%
2. Method statement	
Criterion	Weighting
Quality of approach to achieving the scope of works and work plan This will be assessed in terms of: <ul style="list-style-type: none"> <li>· The quality of the information supplied in response</li> <li>· The clarity of the description for achieving each deliverable</li> <li>· Description of the challenges, constraints, barriers and opportunities</li> </ul>	50%
3. Pricing Approach	
Criterion	Weighting
An excel spreadsheet detailing the estimated hours per person to deliver the consultancy approach. This must include costs for attendance (physical/virtual) at monthly project meetings and suggested community meetings, including all expenses. A breakdown of the day/hour rates for everyone working on the project must be included.	30%
TOTAL	100%

## 10. Warranties and Disclaimers

Neither the issue of this ITT, nor any of the information presented in it, should be regarded as a commitment or representation on the part of the Client to enter into a contractual arrangement.

Any costs incurred in the creation and the preparation of any Tender, in establishing legal entities or otherwise in connection with this procurement exercise will be the responsibility of the Tenderer and will not be borne by the Client, including (but without limitation) if this procurement exercise is terminated or amended by the Client for any reason.

## **11. Terms and Conditions**

The works described in this Tender are what is currently envisaged to be required, but the Client reserves the right to vary these requirements, by mutual agreement with the successful tenderer.

The Client also reserves the right to terminate the contract, subject to full payment of work which has been satisfactorily completed.

The Client is under no obligation to accept the lowest or any Tender submission.

## **12. Intellectual Property**

The report, presentation and all intellectual property and copyright of all materials prepared under this commission shall rest with the Client.

## **13. Tender Submission and Closing Date**

Any questions regarding this tender should be addressed to the Clerk by 6pm on Friday, 7th June 2024

The deadline for submission of the Tenders is: 6pm on Friday 14th June 2024 on <https://www.contractsfinder.service.gov.uk/dashboard>

Tenders should be submitted through the platform, and any issues should be brought up with the clerk:

Name: John Hammond

Email: [clerk@grantchester.org.uk](mailto:clerk@grantchester.org.uk)

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