

**SWAFFHAM PRIOR COMMUNITY HEAT PROJECT**

**To:** Commercial and Investment Committee

**Meeting Date:** 22<sup>nd</sup> May 2020

**From:** Executive Director, Place and Economy

**Electoral division(s):** Burwell

**Forward Plan ref:** 2020/029      **Key decision:** Yes

**Outcome:** To agree progress on detailed project development and management of key risks for the Swaffham Prior Community Heat Project ahead of an investment decision Autumn 2020.

**Recommendation:** Committee is asked to:

- a) Note progress to date with the development of the project;
- b) Approve the further commercialisation of the outline business case as set out in section 2.2;
- c) Approve the proposed commercial structure for the project;
- d) Delegate to the Chief Finance Officer, in discussion with the Committee Chair, signing of the Heat Networks Investment Project (HNIP) contract, if the Council is awarded grant for commercialisation and construction of the Heat Network;
- e) Approve Bouygues Energies and Services Solutions Ltd. as the Design, Build, Operate and Maintain (DBOM) contractor;
- f) Note the application to the Department for Transport for Street Works code powers;
- g) Progress a Round Table discussion on the Renewable Heat Incentive (RHI) with Business, Energy and Industrial Strategy (BEIS) and the Office of Gas and Electricity Markets (OFGEM) involving MPs and Ministers on the Swaffham Prior Community Heat Project; and
- h) Note the Key risks and in particular the Covid-19 risks and the importance of this project to support Economic Recovery

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## 1. BACKGROUND

- 1.1. In March 2017, the Council approved its Corporate Energy Strategy. The strategy includes a vision to help *“build energy resilient communities through aligning the Council’s assets and the potential for energy generation with local needs”*. A key objective of the strategy is to *“work with all partners and the local community to identify and facilitate low carbon energy projects using the Council’s assets to bring benefits to all partners.”*
- 1.2 Research undertaken in 2019 by Cambridge University Science and Policy Exchange (CUSPE) identified that approximately one quarter to a third of carbon emissions in Cambridgeshire come from domestic and commercial buildings demanding heat for hot water and space heating. Of this, it is estimated 10,000 homes and businesses across Cambridgeshire are dependent on oil for heating and hot water.
- 1.3 In the Council’s Draft Climate Change and Environment Strategy (May 2020), the Council is committing to support oil dependent communities to shift to renewable energy. It highlights the pilot project under development at Swaffham Prior in partnership with the Swaffham Prior Community Land Trust and Government as a key priority.
- 1.4 The Swaffham Prior Community Land Trust (SPCLT) has been the driving force behind the community heat project. It approached the Council in December 2017, sharing a feasibility study it had commissioned and inviting the Council to partner in the project and use rural estate land on the edge of the village, earmarked for industrial development, to host a clean energy centre for the community.
- 1.5 Four rounds of grant funding have been secured for Swaffham Prior Community Heat Project to date. A further application has been submitted during April 2020 to the Heat Networks Investment Project (HNIP) for grant funding for the construction of the heat network. Cambridgeshire County Council (CCC) has match funded the major project development grants from the Department for Business, Energy and Industrial Strategy (BEIS) Heat Networks Delivery Unit and the Cambridgeshire and Peterborough Combined Authority (CPCA) contributed in the early phase of the project.
- 1.6 The Swaffham Prior Community Heat Project comprises an energy centre located on County land at Goodwin Farm which includes a ground source heat pump, air source heat pump, solar PV, thermal storage and a small education centre. Connecting to the energy centre is a district heating network that runs through the village connecting to homes and businesses. Heat is transferred from the heat network via a heat interface to existing home hot water and heating systems. Oil boilers and tanks are removed and disposed of as no longer needed. Please see a diagram of the project in **Appendix A** and to get a visual sense of the project please watch the link to a video describing the community heat project  
<<https://heatingswaffhamprior.co.uk/about/>>
- 1.7 A project Board comprising representatives from the Council and the SPCLT was set up in 2018 to drive the project forward. Advising the Board is a strong multi-disciplinary team of external and internal specialists set out in **Appendix B**. **Appendix C** summarises the project development, grant funding, work phases and deliverables to date.
- 1.8 The outcome of this report is to agree the outputs from the Detailed Project Development and the management of key risks, ahead of an investment decision in Autumn 2020.

## 2.0 Detailed Project Development

2.1 The Swaffham Prior Community Heat Project has been designed within five strategic purposes.

- 100% carbon reduction for heating and hot water for participants particularly rural communities
- No cost barrier to join the scheme at the \*start of the project - opportunity for all households on oil in the village to participate
- Heating costs lower than or equivalent to oil prices\*\*
- A quality assured heat supply service, delivered by a single contractor (Design, Build Operate and Maintain (DBOM))
- The development of a new business and governance model for retrofitting existing oil dependent communities that can be replicated elsewhere.

\*If homes join post-construction an access fee will need to be charged to cover costs of connecting.

\*\* Oil prices pre-Covid 19

2.2 **Outline business case for the Project.** The proposed commercial structure for the project set out under paragraph 2.4 has been informed by the outline business case, government finance incentives and grants and state aid compliance. The overall finances for the project as set out in the current outline business case are as follows.

	<b>£000</b>
Build cost - Energy Centre	3,456
Build cost - Heat Network	3,581
HNIP Grant Funding ( <i>assumed</i> )	-1,790
<b>CAPITAL BORROWING REQUIREMENT</b>	<b>5,247</b>
Operation and maintenance	3,583
Energy costs*	9,196
Financing costs	1,412
<b>TOTAL LIFECYCLE COSTS</b>	<b>14,191</b>
Heat Purchase Agreements	-12,862
Carbon credits and Community Infrastructure Levy	-8,645
Renewable Heat Incentive	-4,826
<b>TOTAL PROJECT REVENUE</b>	<b>-26,333</b>
<b>TOTAL NET INCOME</b>	<b>-12,142</b>

*\*The full cost of grid electricity required to power the heat pumps has been included in the outline business case for prudence, however it is anticipated that a substantial proportion of the power required will be generated onsite through solar PV installations. The detail of this approach will be developed further during the commercialisation phase of the project.*

2.2.1 The total capital cost of the project is £7.037m. HNIP grant totalling £2.08m has been requested to fund 50% of the costs of construction of the heat network (£1,790m) as set out above, and further commercialisation work on the project as set out in appendix C. The residual cost to be funded by Council borrowing would be £5.247m and the anticipated return on this investment is set out in the following table.

Financial Outputs		
	Pre-Intervention	Post-Intervention
IRR	3.74%	5.87%
Annual Net Yield	4.14%	5.79%
NPV	-£431,667	£1,358,777
Payback (years)	25.2	17.0

2.2.2 The pre-intervention and post-intervention financial outputs in the above table show the comparative financial returns excluding and including HNIP grant funding. Assuming the maximum permitted grant funding is secured, the project is expected to generate an average annual net yield of 5.79%; close to the Council's overall commercial portfolio target of 6%. The payback period of 17 years is also comparable to the Council's other commercial energy investment projects. In addition, the project will deliver substantial social and environmental benefits including cleaner air and fuel poverty prevention. The monetised value of the carbon reductions is estimated at £8.6m and capturing this value for the project is subject to a piece of work with CUSPE 2020 researchers on the sale of carbon credits (see 2.2.4 below). The Social Value of air pollution savings are calculated as a further £1.5m but these are socialised benefits not captured by this project.

2.2.3 The Energy Centre will be fully financed from Public Works Loan Board (PWLb) borrowing by the Council and no third party investment is assumed. In March 2019 the Council submitted a successful bid to the Treasury to borrow over £60m at the Local Infrastructure Rate (LIR) for energy investment projects. The anticipated financial returns for the project assume that the Council can secure LIR borrowing at a rate of around 1.4% based on market conditions as of 1<sup>st</sup> April 2020. It is assumed that the capital investment in the Pipe Co will be funded from HNIP grant and a loan from the Council. This will be repaid through income from the Community Infrastructure Levy, new connection fees, a transmission charge to the Energy Centre for using the heat network and revenues from broadband fibre.

2.2.4 *Income for the Energy Centre* is expected to be generated through the following mechanisms:

- Heat sales to customers – currently the project has 166 out of 300 potential homes interested in signing up to purchase heat from the project. The outline business case forecasts a 90% take-up within 5 years of commencement of heat generation. The village pub and school are also committed to the project.
- Renewable Heat Incentive (RHI) – to incentivise uptake of low carbon heating solutions, the government set up the RHI for non-domestic and domestic projects. This project will access the non-domestic RHI through the submission of a pre-application to OFGEM to secure the incentive and will be eligible for RHI payments on completion of construction and customer connections.
- Carbon credits – the project will save 47,000 tonnes of carbon emissions over 40 years. Work has started with both the Council's commercial team and CUSPE 2020 research project to set up a scheme for the sale of carbon credits to local companies to support

them to deliver their carbon reduction targets. The project has 18 months from now to deliver a mechanism and generate sales of carbon credits. Carbon credit sales are required to secure the viability of this new business model.

- Community Infrastructure Levy (CIL) – An expression of interest has been submitted to East Cambridgeshire District Council to consider the project for its CIL list.

#### 2.2.5 *Income for the Pipe Company* to cover its loan repayment will include:

- Rental charge for broadband providers – in the process of installing the heat network, trenches will be dug which can be shared with other utilities. Of particular interest to the village is the provision of competitively priced, future proofed full fibre infrastructure. A detailed business case for full fibre infrastructure provision will come forward as part of the investment grade proposal.
- Community Infrastructure Levy – it is the intention to apply to East Cambridgeshire District Council to include the Swaffham Prior Heat Network on the CIL list to access additional funding contributions.
- Transmission charge to the Energy Centre – the Pipe Company will levy an annual charge on the Energy Centre for distribution of the heat to homes using the heat network. This charge will service the interest repayments on the loan from the Council and cover maintenance costs for the network.

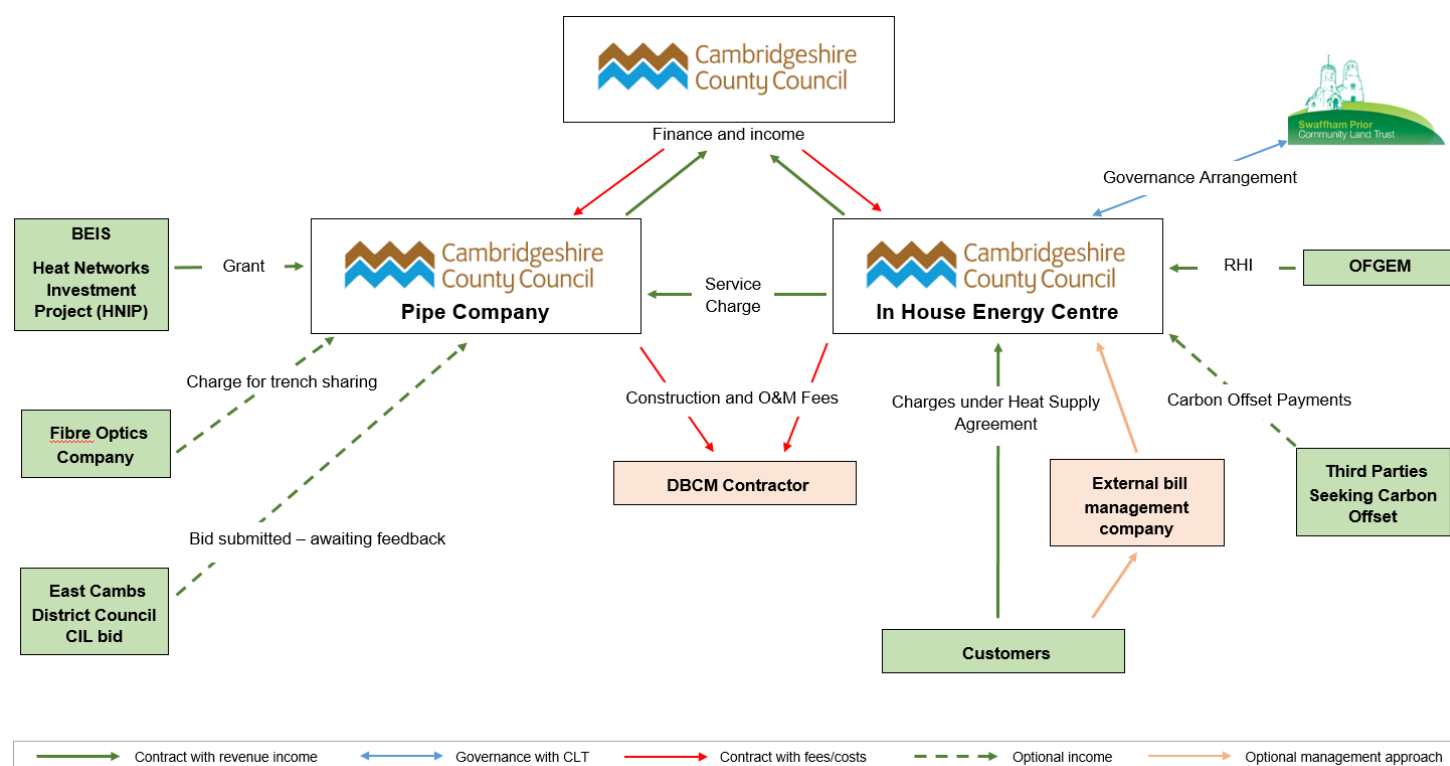
2.2.6 *The Counterfactual.* The project has modelled the economic, social and environmental impacts of the community heat project against two counterfactual scenarios, namely ‘do nothing’ and ‘individual home conversion to renewable heat’. The ‘do nothing’ scenario assumes that the village continues to utilise heating oil as the primary fuel source, whereas the ‘individual conversion’ assumes that the existing oil boilers at each of the ~300 dwellings are replaced with air-source heat pumps, along with the necessary upgrades to the buildings and their heating systems for compatibility. The counterfactual modelling suggests that the community heat network is financially beneficial to the customers, is able to achieve superior carbon efficiencies and has a lower overall environmental impact. Ensuing studies will seek to quantify environmental impacts in more detail. Please see **Appendix D** for a summary of each scenario modelled and the environmental benefits.

2.2.7 *Overall cost.* This is the first project of its type at this scale in the country. The costs of the project reflect the unknown risks in its delivery and operation and over time. Costs for new schemes will reduce as unknown risks are identified, understood and costed. It is also worth noting that the cost of the project currently reflects the full costs of the heat network where this community infrastructure will last up to 60 years, beyond the current project period.

2.3 **Legal considerations.** During March 2020, Sharpe Pritchard LLP reviewed options for the commercial structure of the project to ensure state aid compliance and to maximise access to a range of financing opportunities key to the project’s deliverability. The preferred structure is set out below in diagram 1 and its rationale.

- 2.3.1 *The Pipe Company* will be responsible for installing and maintaining the heat distribution network and heat interface connections with customer properties; these are the elements of the project that are eligible for 50% HNIP grant funding. The HNIP funding conditions dictate that local authority-controlled projects must be held off the National Accounts which requires the establishment of a Special Purpose Vehicle (SPV), such as a Council-owned limited company. The transmission charge will allow the Pipe Company to generate income to repay the loan from the Council, which will be charged at a commercial rate of interest in line with state aid requirements.
- 2.3.2 *The in-house Energy Centre* will generate renewable heat for distribution to the community via the heat network. Heat Purchase Agreements will be established between customers and the Energy Centre under the legal powers set out in sections 2.3.4 – 2.3.6 below. Keeping the Energy Centre in-house satisfies state aid restrictions on borrowing for commercial projects at below-market rates.

Diagram 1: Proposed Commercial Structure of the Project



- 2.3.3 Since the Pipe Company and Energy Centre are distinct corporate entities, both will contract with the Design, Build, Operate and Maintain Contractor (Bouygues Energies and Services Solutions Ltd) under the existing Refit 3 framework agreement as set out in the table in paragraph 2.3.8. Both the PipeCo and Energy Centre will be democratically accountable to the Council as Council owned and Council operated entities respectively. The project governance arrangements are discussed in further detail in section 2.3.7.

- 2.3.4 *Government Powers and State aid:* Under the Local Government Act 1976 s.11 the Council has the powers to design, construct, operate and maintain an energy centre to generate renewable heat; supply and bill customers for the heat and to lay district heating networks. These 'powers' allow the Council to invest directly into the energy centre for the provision and sale of heat to customers and to access the Renewable Heat Incentive (RHI), on a no aid basis (although review is still being taken to confirm the availability of RHI more generally).
- 2.3.5 The LGA 1976 powers also apply for investment into the heat network, except where grant is needed to help finance the infrastructure. In this case, a Special Purpose Vehicle must be set up, a Pipe Company, and the Council must pass any grant directly to the company, for no aid to apply. This is particularly relevant for the project as an application for grant submitted to the Heat Network investment Project (HNIP) in April requested 50% grant towards the network costs. The proposed commercial structure for the project has been tested and found acceptable to HNIP (subject to any final questions they may raise).
- 2.3.6 *Selling heat:* The powers conferred to the Council through the Local Government Act 1976, s11 mean that it can sell heat directly to customers. The billing and metering arrangements can be set up in-house or sub-contracted. The project will scope options for this role. For example, Council Tax billing arrangements at East Cambridgeshire District Council and commercial operators.
- 2.3.7 *Governance:* Originally, the project was conceived as a joint venture between The Swaffham Prior Community Land Trust and the Council. With the identification of the LGA 1976 powers, the proposed structure has moved away from a joint venture, to one where the SPCLT exerts influence by sitting on the project board. The community representatives on the project Board have requested a covenant or something similar to be applied to the project to protect its interest in the project should the Council decide to sell the project at a future point in time. This option will be reviewed as part of the next phase of work. Although a sale is unlikely, this issue is important to the SPCLT members.
- 2.3.8 *Contracting:* The Project will need to put in place a range of contracts. Some of these are more progressed than others.

Contract	Parties	Progress
Heat Supply Agreement ( including connection letter) – both domestic and non-domestic	Council and Customers	A first draft was developed with community input and the final draft now being progressed
Governance agreement	Council/SPCLT – Parish Council?	Not yet started.
HNIP Grant	HNIP/Council	HNIP will provide the grant agreement.
Loan	Council and Pipe Co.	To be started.
Design, Build, Operate and Maintain (DBOM)- Energy Centre	Council and Bouygues E&S	Refit 3 Framework – call off contract. For approval
DBOM- Heat Network	Pipe Co. and Bouygues E&S	As above.



Interface Agreement	Agreement between the Council and the Pipe Co. for the management of Bouygues.	To be started in current Detailed Project Development phase - 2
Service Contract	Council and Pipe Co.	HNIP commercialisation
Retail Outsource Contracts	Council and external provider	HNIP commercialisation
Third party Income Contracts	Council and TBC – e.g. Fibre Optics Company, CIL and Carbon credits ( see commercial structure and paragraph 2.2.4-2.2.5)	Work is underway.

2.3.9 **DBOM:** The Council ran a mini-competition under the Refit 3 Framework during 2017. Bouygues Energies and Services Solutions Ltd (Bouygues E&S) were awarded the procurement, as successful bidders in November 2017. It is under this arrangement, that the project design has been developed and the outline business case. The next steps are to progress to an Investment Grade Proposal and work through the detail of the Construction, Operation and Maintenance (O+M) contracts. It is proposed that the Project contracting is for the full DBOM services across the system, covering the energy centre and heat network and that Bouygues Energies and Services is the sole contractor. The rationale for putting all this together to the extent possible is to ensure the performance risk sits with one contractor and is not subject to disputes between different suppliers, particularly as this project is a first for everyone at this scale, must perform well for the community as an exemplar project and is complex. Under the Refit 3 Framework, the Council has the option to include O+M services as part of the contracting for the project. The O+M contract along with the Investment Grade Proposal will be subject to best value review by Local Partnerships as set out in paragraph 2.4.7. The Council will also be provided with detailed procurement advice and risks by its legal advisers.

2.4 **Technical development of the Project:** This section covers the planning, design, highways and investment grade proposal.

	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20
<b>Design</b>						
Preliminary Design						
Developed Design						
Technical Design						
<b>Planning</b>						
Application Preparation						
Community Engagement						
Planning Determination						
<b>Other Statutory</b>						
Listed Building Consent Order						
Highways Consents						
DNO Connections						
<b>Investment Grade Proposal</b>						
Procurement						



Business Case							
Reporting							
Quality Assurance							
<b>Committee Decision</b>							
<b>Miscellaneous</b>							
Air Quality Monitoring							Continued...
Dept. of Engineering, UC, Project							

**2.4.1 Design Development.** Under the previous round of grant funding the project was progressed to Royal Institute of British Architects (RIBA) Stage 2 and for some aspects of the project RIBA Stage 3. Current work is focussed on the preliminary design required for the planning application and this includes illustrative plans and elevations of the borehole field, solar PV array, energy centre and heat network (excluding final connections to properties, see 2.4.3). The HNIP commercialisation funding, if agreed will support finalisation of developed designs to RIBA stage 4, which will include additional specialist technical surveys, a full set of developed design drawings and specifications, to a level that is suitable for firm-price procurement of the equipment and works. This will also include detailed energy modelling and performance simulations. Currently the MPhil Energy Technology course with the University of Cambridge Engineering Department are undertaking detailed assessments of different engineering aspects of the project and reporting findings by August 2020.

**2.4.2 Planning.** Cambridgeshire County Council is the planning authority for the Swaffham Prior Community Heat Project under Regulation 3 of the Town and Country Planning General Regulations 1992. An Environmental Impact Assessment (EIA) screening and pre-planning enquiry was submitted to the County Council on 5<sup>th</sup> March 2020 and it is the Council's opinion, after assessing the proposal and consultation responses, that the proposed development is not an EIA development. The project team is currently preparing the planning application for submission by the end of June 2020 and a range of specialist studies have been commissioned to inform the application including (but not limited to) a geophysical survey to assess for significant archaeological assets, landscape and visual impact assessment, preliminary ecological assessment, heritage assessment, ground water impact assessment (for the boreholes), flood risk assessment and glint and glare study (for the solar PV).

**2.4.3 Listed Building Consent Order (LBCO).** The project will look to apply to East Cambridgeshire District Council (ECDC) for an LBCO that applies to the whole village to facilitate homes and businesses to participate in the project without requiring individual applications for listed buildings consent to be submitted. Early discussions with ECDC Conservation Officer has started. It is our understanding that an LBCO of this nature has not previously been undertaken in the district, so it will be important that this process can provide a model for other villages that is practical and deliverable where whole village decarbonisation retrofits are proposed.

**2.4.4 Highways consents.** Works to the highway (including laying pipes within the public highway) generally require the consent of the Highways Authority and are authorised by way of a street works licence, section 50 of the New Roads and Street Works Act 1991 (the '1991 Act'). However, under the LGA 1976 s.11 the Council has powers as a statutory undertaker for the purposes of undertaking street works and can rely on the 1991 Act to undertake the street works for the community heating project. To allow the Council to do this, it must apply for a Street Works Act code and comply with the provisions of the 1991 Act. It is proposed

to apply for the codes under the name ‘**Cambridgeshire County Council District Heating**’ to differentiate it from our existing code under the Highways Authority and to allow for future heating projects beyond Swaffham Prior.

2.4.5 *Community Engagement:* BEIS HNDU funding has paid for external community engagement support for the project. In September 2019, 166 homes in principle supported participation in the project and work continues to keep members of the community up to date with developments and encouraging further uptake. In addition to the workshops and events held last year, engagement more recently due to Covid- 19 is now on-line with a newsletter, schools work booklets, social media and website updates. The project continues to engage with other communities interested in doing similar projects and is sharing its experience to date. These include the Welsh Development Agency; village of Compton Dando and the Combined Authority of Bath and North East Somerset (BANES); Bury St .Edmunds, Tunbridge Wells, Surrey and more locally in Cambridgeshire Reach, Histon and Impington, Great Staughton, Perry and Grafham villages.

2.4.6 *Air quality monitoring:* There are two schemes to measure air quality underway with the project. The first is with ECDC, where a number of diffusion tubes have been set up across the village to monitor NOx and background emissions. This data will be provided monthly and is a high level indication of pollutants. A more detailed, granular level of monitoring is currently being installed to monitor particulates and NOx in strategic locations in the village and should be in operation by the end of May 2020. Air quality is being measured to provide evidence for the emissions reduction as a result of the project, to inform Public Health, future CUSPE research proposals as well as providing insights for post Covid -19 air quality emissions, lifting of lockdown and implementation of the heat project.

2.4.7 *Investment Grade Proposal:* The investment decision for the project is required October 2020. Detailed designs will be completed (once the planning application is submitted) to inform supply chain specifications for the equipment and services to deliver the project and to finalise costs. Bouygues E&S will undertake a series of procurement processes to achieve firm pricing for the implementation and operation of the project, inviting local supply-chains to participate wherever possible. The Investment Grade Proposal will provide firm capital and operational costs, a final design and specification for the project, project execution planning documents and an economic business case with energy performance guarantees. The draft Investment Grade Proposal will be reviewed by Local Partnerships for quality assurance and value for money verification, ahead of a final IGP coming to committee for an investment decision.

### 3 Key Project Risks

**Appendix F** identifies the main project risks. Highlighted below are two critical project risks that need careful management during the next 6 months.

3.1 Income risk:  
*Renewable Heat Incentive.* The RHI ends on 31st March 2021. Successor schemes to the RHI are now subject to consultation for implementation from April 2022 but critically for this project, the timing of the CV-19 pandemic and the phased process of accessing development grants, has led to a key investment decision in October 2020 for the Council whilst there is much uncertainty. To manage this uncertainty, it is proposed a Roundtable discussion is developed, led by our local MP and the Council, inviting key national

partners/stakeholders to join the discussion ahead of an investment decision, to discuss how best to manage this important project and the timeline constraints of the RHI.

*Selling of carbon credits:* Carbon offset schemes have been around for a number of years but none specifically offering Cambridgeshire businesses the opportunity to invest in local community infrastructure that reduces carbon emissions in Cambridgeshire. This scheme is currently being developed through the CUSPE 2020 programme and the Council's Commercial Team. The aim is to develop an income stream through the selling of carbon reductions for projects, supporting businesses to deliver their ambitions whilst helping communities. There is an 18 month lead in time for the set up and sale of carbon credits and this forms a key part of the new business model for community energy projects.

- 3.2 *Covid -19 pandemic.* This risk is multifaceted. On the one hand, oil prices have reached their lowest point since the 1970's due to unprecedented fall in demand for transport, manufacturing and other goods globally, leading to an oversupply and oil storage problem. For oil dependent communities this provides a short term financial benefit but is not expected to be sustained. However, for the project, less homes could decide to commit to change from oil to renewables and sign up to the project from the start, whilst a short term reduction in oil price is available to them. On the other hand, there is also a perception that investing this level of finance into a project is imprudent, when the UK has bigger financial priorities resulting from Covid. Whilst inevitably there will be many financial demands on the public sector during the next two years, investing in this type of scheme will be essential to provide stability to our local economy and businesses through supporting existing local jobs and supply chains, whilst the UK recovers from the economic shock of lockdown. There is much national and international debate as how to create an environment led economic recovery that continues to decarbonise our economy and tackle climate change.

#### **4. ALIGNMENT WITH CORPORATE PRIORITIES SF TO COMPLETE**

##### **4.1 A good quality of life for everyone**

The Council approved an Environment Motion in May 2019 to tackle climate change and biodiversity loss, both of which require concerted global and local effort to prevent impacts that will limit future generations' quality of life. The Swaffham Prior Community Heat Project is a local solution to these challenges. Air quality benefits will be felt locally and wider social and environmental benefits for tackling climate change.

##### **4.2 Thriving places for people to live**

Cambridgeshire is a pre-dominantly rural County with a large network of villages. It is important to find smart and clean solutions to decarbonise our rural communities to help them thrive and prevent rural communities being left behind owing to a strong focus on investment into smart cities.

##### **4.3 The best start for Cambridgeshire's children**

The aim is to provide an education centre as part of the energy centre on our land. The education centre will provide opportunity for students to see the technology working and how the project works for the community. Initial discussions have been held with

Cambridgeshire Outdoors on how this could fit into future learning programmes and build on work with our Universities to benefit from research projects to improve performance of the system as technology develops. Swaffham Prior school children have been directly involved in the project. During science week in 2019 the school input to the video shared in paragraph 1.6 on how a heat pump works and projected an image of the borehole drilling onto the side of the school wall for everyone to see what was happening on site, but at a safe distance. The impacts of climate change will be felt most keenly by future generations and developing projects now that use clean energy supplied locally, independent of global geopolitics, will help manage future fuel poverty.

#### **4.4 Net zero carbon emissions for Cambridgeshire by 2050**

Cambridgeshire's carbon emissions in 2017 reached 6.1million tonnes. This project is forecast to reduce annual emissions in Swaffham Prior by 1,285 tonnes per annum when connections reach 90% of the village. In total 47,000 tonnes of carbon emissions will be saved over 40 years. For Cambridgeshire to deliver net-zero by 2050 all buildings across Cambridgeshire will need to reduce carbon emissions to net-zero. New business models need to be developed and this project provides a 'blue print' for other oil dependent communities to decarbonise. Already there is significant interest in the project by government and communities see paragraph 2.4.5

### **5. SIGNIFICANT IMPLICATIONS**

#### **5.1 Resource Implications**

Paragraph 2.2 sets out the project outline business case. The Energy Investment Unit staff costs (including finance support) for the development of the project has been partly covered by the transformation fund agreed in May 2019. For further community heat projects like this, dedicated project management support will be required. It is also important to note that the rural estate land for the energy centre is integral to the Swaffham Prior project business case and the rural estates team have supported the project development.

#### **5.2 Procurement/Contractual/Council Contract Procedure Rules Implications**

The Council appointed Bouygues Energies and Services Solutions Ltd in November 2017 as a result of a mini-competition under the Refit 3 Framework. It is this procurement that has been used to develop the project.

The Rural Estates team have liaised with the tenant farmer for Goodwin Farm regarding the land earmarked for the energy centre and ongoing access to the land for the development of the project. The Swaffham Prior Board has also met the tenant farmer and the tenant is supportive of the project. The existing barn on the land is planned to host the new energy centre and a new equivalent barn, will be built in a location agreed between the Council and the tenant. This cost is included in the outline business case.

#### **5.3 Statutory, Legal and Risk Implications**

Please see paragraphs 2.3.4-2.3.6 for details of the powers under the Local Government Act 1976. These powers have been tested with Counsel and provide the Council with statutory undertaking powers pertaining to the Highways.

A Risk register is set out in Appendix F and in section 3.

#### 5.4 Equality and Diversity Implications

Please see paragraph 2.1 describing the strategic purposes of the project and offering access to all in the village.

#### 5.5 Engagement and Communications Implications

BEIS HNDU grant has helped to fund community engagement for the village recognising that the community and its residents are crucial to the project's success. Last year 166 homes agreed in principle to sign up to the project and further work is planned to engage the community during the next few months to confirm this commitment.

Four community presentations have been held in the village hall to report project progress, along with drop-in sessions such as a 'teccy' walk for those more interested in the engineering design details, attendance at village events and working with the school. A session with residents in the local pub also examined a model heat agreement to identify and understand residents concerns signing up for heat sales.

An information booklet was shared with the village in 2019 and ongoing news is posted on the project website. Facebook posts, newsletters, schools magazines, articles in the local Crier magazine have also been published during the year plus items on TV (Look East, July 2019), radio interviews and local newspapers.

#### 5.6 Localism and Local Member Involvement

Progress updates have been provided to the Swaffham Prior Parish Council meetings and to the Local Councillors.

#### 5.7 Public Health Implications

Please see paragraph 2.5.6 on air quality monitoring.

Implications	Officer Clearance
<b>Have the resource implications been cleared by Finance?</b>	Yes Name of Financial Officer: Ellie Todd
<b>Have the procurement/contractual/ Council Contract Procedure Rules implications been cleared by the LGSS Head of Procurement?</b>	Yes Name of Officer: Gus Da Silva
<b>Has the impact on statutory, legal and risk implications been cleared by the</b>	Yes Name of Legal Officer: Fiona MacMillan

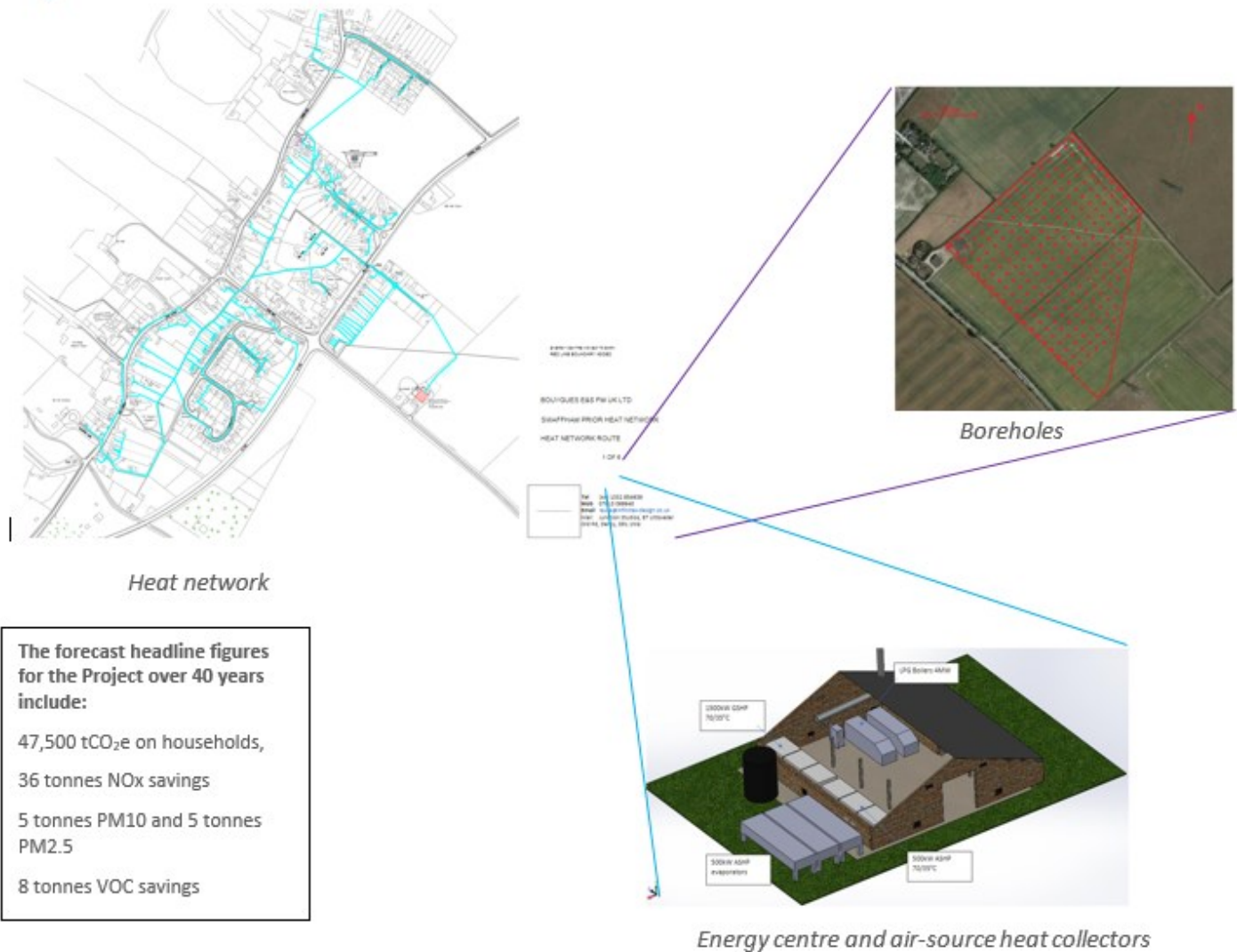
<b>Council's Monitoring Officer or LGSS Law?</b>	
<b>Have the equality and diversity implications been cleared by your Service Contact?</b>	Yes or No Name of Officer: Elsa Evans
<b>Have any engagement and communication implications been cleared by Communications?</b>	Yes Name of Officer: Eleanor Bell
<b>Have any localism and Local Member involvement issues been cleared by your Service Contact?</b>	Yes Name of Officer: Emma Fitch
<b>Have any Public Health implications been cleared by Public Health</b>	Yes or No Name of Officer: Iain Green

<b>Source Documents</b>	<b>Location</b>
Swaffham Prior Community Heat Project, Committee Report, November 2018	INSERT Link
Heating Swaffham Prior Community website – updates and newsletters	<a href="https://heatingswaffhamprior.co.uk/">https://heatingswaffhamprior.co.uk/</a>
Swaffham Prior Community Heat Project – Information Booklet	<a href="https://www.mlei.co.uk/projects/swaffham-prior-community-heat">https://www.mlei.co.uk/projects/swaffham-prior-community-heat</a>
Heating Swaffham Prior video	<a href="https://vimeo.com/403639185/47ee190c01">https://vimeo.com/403639185/47ee190c01</a>
Round 9 BEIS HNDU application for Detailed Project Development, October 2019	Internal File: Energy Investment Unit
HNIP application, April 2020, including Finance and Energy Modelling	As above
Techno-economic model version 5, outline Project Business Case	As above
EIA screening and Pre-Application, March 2020	As above
EIA screening opinion, April 2020	As above
Local Government Act 1976, section 11, Counsel Opinion, April 2020	As above

## **Appendix A: Swaffham Prior Community Heat Project**

Please note: The Heat Network in this schematic is still indicative and subject change. The final route will be determined through ongoing detailed discussions with building conservation officers.

### Project schematic



The HIU performs a number of functions, it:

- Transfers heat from the network to water
- Establishes the boundary between 'the network' and your home
- Removes the need for hot water storage
- Measures energy usage through an integrated meter



The HIU fits into a kitchen cupboard. It may replace an existing boiler and water heater, or these may be retained in addition to the HIU.

HIU= Heat Interface Unit



## Appendix B: Specialist Project Advisors

External	Advisors	Key Services
Technical	Bouygues Energies and Services Ltd	Energy modelling Technology choices Scheme design Technical risk management
Legal	Sharpe Pritchard LLP	Commercial structure State Aid Heat Agreements
Community Engagement	Line Undrawn	Project information targeted to the community Awareness raising events Website and newsletter development
Project Management	Avieco Ltd	Coordinating the different workstreams Communication Reporting Grant applications Critical path and risk register
Procurement	Local Partnership	Refit 3 Framework compliance Review Work, Operations and Maintenance Contracts to benchmark costs
Grant Providers	BEIS HNDU	Guidance for grant compliance Share best practice
	Heat Network Investment Project	Project Development Advice

Swaffham Prior Community Land Trust (SPCLT)	Advisors	Key Advisory Services
	SPCLT - Directors	Project Board Members Community engagement Local housing and infrastructure challenges Local environmental concerns and issues
CCC Internal	Teams	Key Services
	Energy Investment Unit	Project Lead, Development of new business model Project governance
	Rural Estate	Liaison with tenant farmer
	Finance	Reviewing techno economic modelling Updating finance model and agreeing finance assumptions Financial due diligence

## Appendix C: Summary of the Project Development and deliverables to date

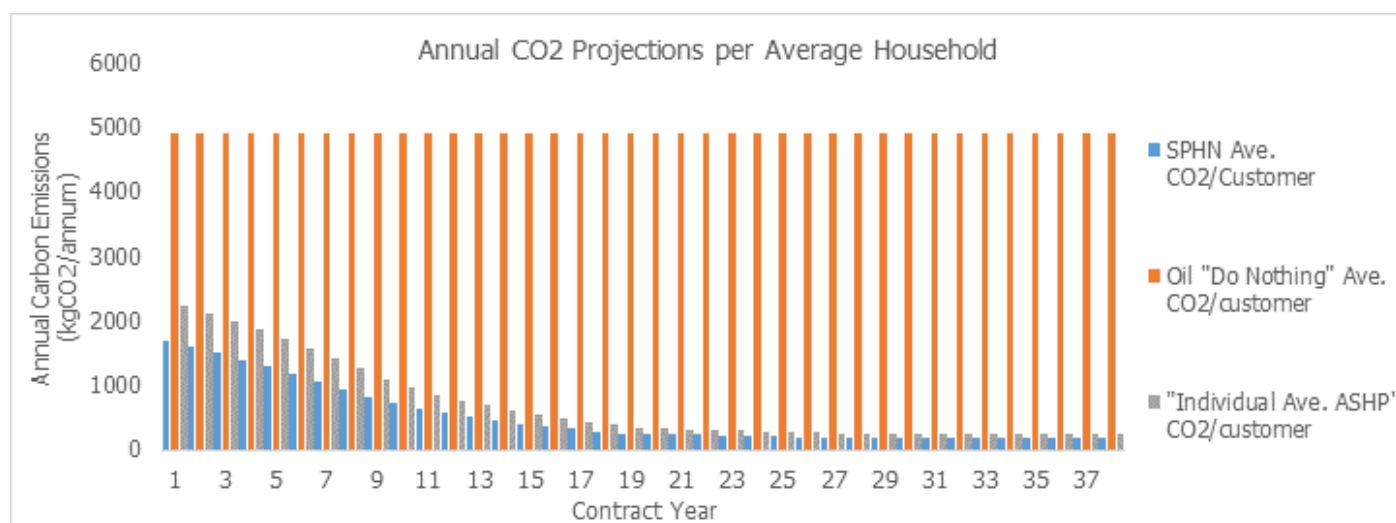
Project Phase	Grant (£)	Match Funding (£)	Total (£)	Key deliverables
High level Feasibility	20,000 WRAP	-	20,000	Identification of two community heat project options for Swaffham Prior village
Techno-economic modelling	40,200 BEIS HNDU	20,000 (CPCA)	60,200	Options appraisal of key technologies Techno-economic model for preferred technology option A draft Heat Agreement for customers Installation of seven heat meters to measure distribution and level of consumption
Detailed Project Development - 1	100,300 BEIS HNDU	29,700 (CCC)	130,000	200m borehole planned and drilled to assess heat availability for ground source heat pump 166 homes signed up to be part of the heat project as an anchor load Detailed design work for energy centre and heat network to RIBA stage 2 Updated techno-economic model to reflect new designs, technologies, better data and soft market testing
<b>Detailed Project Development - 2</b>	<b>232,000 BEIS HNDU</b>	<b>66,000 (CCC)</b>	<b>298,000</b>	<b>Current phase of work including:</b> Planning Application Commercial structure of the Project Future Contracting Funding – Heat Network Improvement Project (HNIP) incl outline business case Income identification Risk management
<b>TOTAL</b>	<b>392,500</b>	<b>115,700</b>	<b>508,200</b>	
Commercialisation	290,000 (HNIP)	–	290,000	Set up of commercial structure Final scheme designs Investment Grade Proposal (informed by planning decision)

				Best value reviews by Local Partnership Heat Agreements with customers Finalise DBOM contracts Pre-application to OFGEM for RHI
Construction – District Heat Network	1,790,444 (TBC)	1,790,445 (CCC)	3,580,889	Notice to Proceed and mobilisation
Construction – Energy Centre	–	3,455,816 (CCC)	3,455,816	Notice to Proceed and mobilisation
<b>TOTAL</b>	<b>2,080,444</b>	<b>5,246,261</b>	<b>7,326,705</b>	

## Appendix D: Counterfactual

**‘Do nothing scenario’** - In summary, the community heat project indicated that the average customer benefit of circa £81 in the first year, rising to £161 from year 14 onward (in real terms) against the ‘do nothing’ scenario. Across the entire village, a financial benefit of circa £21k in year 1, rising to £41.5k in year 14 is estimated. The annual carbon emissions of each dwelling would reduce on average by 3TCO<sub>2</sub> (65% in heating and hot water), rising to 4.33TCO<sub>2</sub> (96.5%) by year 30 (2050). Broader environmental impacts, such as other air emissions, noise, traffic and hazardous substances are also considered to be significantly greater in this scenario.

**‘Individual home conversion scenario’** - the model is more complicated for the second scenario, noting that the customer would need to make a substantial capital investment and for some an ASHP is not a viable solution at low level temperature delivery. The domestic RHI provides a significant saving during its 7year term, though this does not entirely offset the capital cost. However, beyond this term, the total annual expenditure per average dwelling is estimated to be approximately £470 greater individually than for the community heat network. The total cost of heat (including the initial capital and all operational costs) over a 10 year period is £24k, compared with just £12k with the community heat network. The annual carbon emissions reductions associated with heating and hot water production from the community scheme would be 1.58TCO<sub>2</sub> for the community heat network compared to 2.02TCO<sub>2</sub> in year 1 for individual homes. The carbon emissions remain at approximately 30% higher for individual scenario compared to the community heat network over the 40 year lifespan.



**Please note:** The second scenario has several environmental impacts, including noise and cold plumes (created by the heat pump). However, a more significant impact of immediate mass roll-out of domestic air-source heat pumps is the increase in demand placed on the local electricity network. As each heat pump would operate independently of one another, yet respond similarly to heat demands, the peak load placed on the electricity network could be significant – this is highlighted in recent studies undertaken by BEIS. Whilst unsubstantiated, it seems probable that this increase in load could result in a need for network reinforcement, which would effectively add to capital costs through network upgrades.

## Appendix E: Community Engagement

Images of Swaffham Prior from the Heat Pump video







Cllr Steve Count and Emma Fletcher, Swaffham Prior Community Heat Project, July 2020, On-site at County Council's Goodwin Farm to witness borehole testing for the Ground Source Heat Pump.

All images below show the drilling of the 200m boreholes with the team, contractors and BBC Look East film crew.



