

Clean electricity supply for Swaffham Prior Community Heat Project via Private Wire from North Angle Solar Farm

To: Commercial and Investment Committee

Meeting Date: 19 March 2021

From: Steve Cox, Executive Director, Place and Economy

Electoral division(s): All

Forward Plan ref: N/A

Key decision: No

Outcome: Supply clean electricity from North Angle Solar Farm to Swaffham Prior Community Heat Project via a Private Wire.

Recommendation: Members are asked to:

- a) Confirm support for Option B, a private wire solution connecting North Angle Solar Farm, Swaffham Prior Community Heat Network and the Burwell Local substation as set out in paragraphs 2.4-2.7 and its implementation as set out in the next steps under section 4.0;
- b) Delegate the implementation decisions on Option B to the Executive Director Place and Economy and Chief Finance Officer in consultation with the Chair of Committee and the Energy Investment Working Group, providing these decisions fit within the investment cases approved for both projects.
- c) To note the private wire connection risks and opportunities set out under sections 3.0 and 6.0

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1. Background

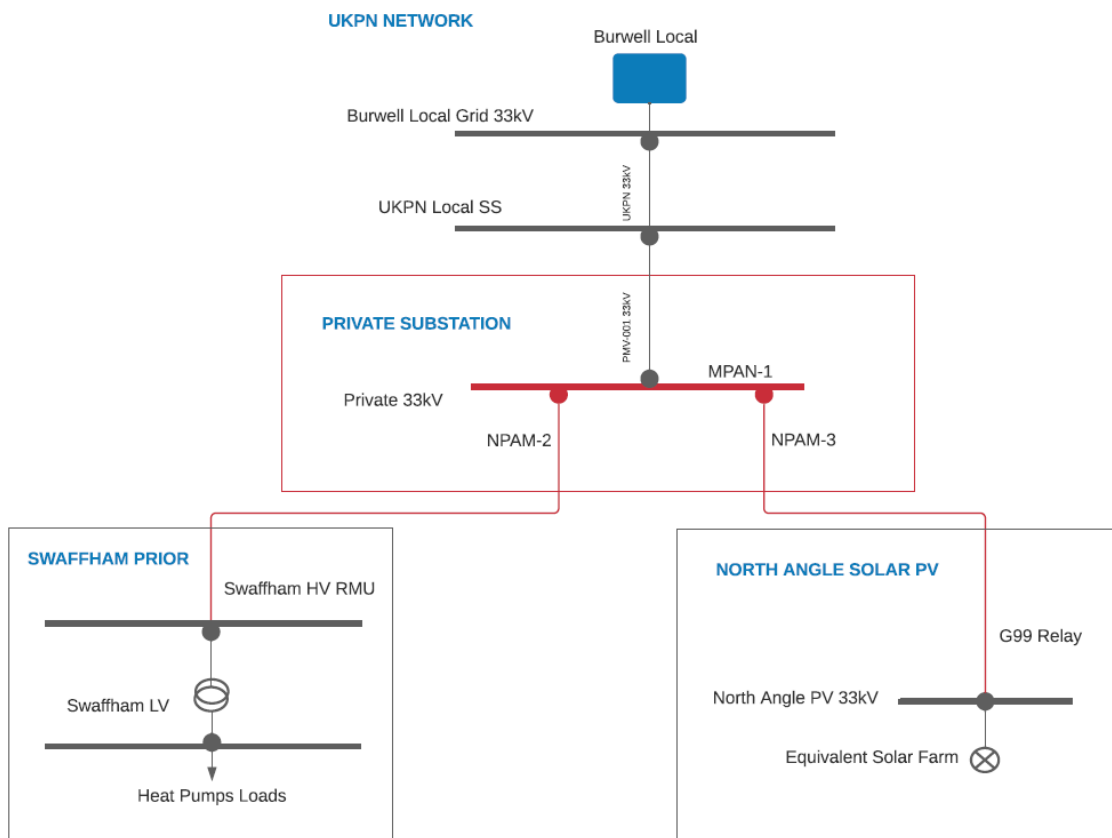
- 1.1 In May 2019, Cambridgeshire County Council (CCC) declared a Climate and Environment Emergency. In 2020 the Council set a corporate objective to deliver net-zero carbon emissions for Cambridgeshire by 2050 and published its Climate Change and Environment Strategy (CCES) approved at Full Council in May 2020. The strategy includes measures to mitigate climate change and puts the use of the Council's assets to generate clean energy at its core.
- 1.2 In December 2020, Commercial and Investment Committee approved the investment case for the North Angle Solar Farm (NASF) which included the costs for a private wire connection to supply Swaffham Prior Community Heat Project (SPCHN). Committee also agreed to scope detailed options for the private wire connections, in particular for the connection and supply of electricity to SPCHN. The aim being to sell approximately 5% of the electricity generated at NASF to the proposed Swaffham Prior Community Heat Project at £0.05/kWh, equivalent to the wholesale price supplied to the Grid. This could mitigate the risk on 5% of the NASF generation to wholesale price reductions, supply clean electricity locally and benefit the SPCHN.
- 1.3 The NASF project received planning permission in September 2020 and work is underway discharging the relevant pre commencement planning conditions and finalising the implementation plans to mobilise the project. The project construction is scheduled to start in summer 2021 with the view to supply electricity during the second half of 2022.
- 1.4 In January 2021, the Council's Environment & Sustainability (E&S) Committee approved the investment case and the capital expenditure for the SPCHN including the estimated costs for the private wire to connect SPCHN to NASF.
- 1.5 The SPCHN project secured planning permission on 24th November 2020 and the scheme is due to start construction in summer 2021. This project must start supplying heat to initial customers by 31st March 2022. The main bulk of customer connections will progress from April 2022 onwards.
- 1.6 The outcome of this report is to progress to detailed design and construction of the private wire connection, which will supply clean electricity from late 2022 from the NASF to SPCHN.

2. Progress Update

- 2.1 Both NASF and SPCHN must connect to the local electricity distribution network at the same point, Burwell Local substation. It is essential for both projects to connect to the distribution network; for NASF it allows the project to sell clean electricity wholesale into the market via the distribution network and for SPCHN to access electricity supplies for the heat pumps at the energy centre when the NASF is not generating sufficient supplies e.g. at night or during peak winter.
- 2.2 The distribution network in this area of East Cambridgeshire is heavily constrained. This means the majority of new connections must connect to the 33kV system rather than 11kV and pay for network upgrades as part of this process.

- 2.3 Both NASF and SPCHN projects have been liaising with UK Power Networks to connect to Burwell Local substation. UKPN have supplied costs to connect the projects individually to Burwell Local and these are set out in table 1 below as Option A. Under option A, both UKPN and an Independent Connections Provider (ICP) deliver the cable route and connection to Burwell Local using statutory undertaker powers. The cable route is then subsequently adopted by UKPN, who can then connect other projects to the cable route.
- 2.4 Option B is a private wire solution. A private wire is proposed that connects NASF and SPCHN, allowing NASF to directly supply electricity to SPCHN. SPCHN requires approximately 5% of the total generation at NASF with the balance being fed into the distribution network via a private substation connection and sold at wholesale price. The Council is the owner of the private wire and must take on maintenance responsibilities. This option came forward when it was clear that both projects would effectively share the same point of connection at Burwell Local. Examining the flows of electricity, the Council would in effect be selling generated electricity wholesale at ~5p/kWh from the NASF project into the distribution network and yet buy it back via the Burwell Local connection for ~14p/kWh to supply electricity to SPCHN. This led to discussions that both projects could benefit from a private wire solution.
- 2.5 SSP Electrical Ltd were procured to develop the overall electrical concept for the potential integration of the North Angle Solar PV array and the Swaffham Prior heat pump. The initial feasibility study confirmed outline feasibility and an outline High Voltage (HV) Design of the system is set out below.

Figure 1 – Integration Concept



2.6 Energy modelling of both the SPCHN electricity demand and the NASF generation identified that the majority of the SPCHN load demand can be aligned with daylight hours minimising power usage of the system during night time when NASF is not producing.

2.7 Cost comparison of Options A and B is detailed in table 1 below.

	Option A (£M)	Option B – Private wire (£M)
Contestable work	6.55	4.33 (including wayleaves)
Non-contestable work	1.43	1.43
Contingency	0	0.25
Other	0	TBC – lease costs for land to site the private substation and maintenance contract costs
TOTAL £M	7.98	6.1 plus costs for land lease and maintenance contract

3. Material Risks and Opportunities

3.1 **Regulatory Implications.** There are no regulatory reasons why the Council cannot own a private wire. However, private cables do not always show up on property searches (especially highway searches) and it will be important for the Council to ensure independent registration of a cable to ensure this is picked up to avoid the risk of cable strike during subsequent construction.

3.2 **Planning Implications.** LGSS Law have advised that if the cable route is delivered by a licensed provider under section 6 of the Electricity Act 1989 this would fall under permitted development, otherwise a planning application will be required. The solution of procuring a licensed provider to deliver the cable route is currently being explored but which then allows the Council to retain ownership of the cable rather than being adopted by UKPN. If feasible, the costs of this solution will then need to be assessed against the risks associated with a planning application and the timescales for implementation.

3.3 **Wayleave negotiations:** The chosen cable routes mainly go through CCC-owned land but they do also cross 3rd party private land. Different route options have been identified to manage the risk of any one party holding the Council to ransom on wayleave price.

3.4 **Private substation:** Land for hosting the private substation is required. The location of this is important to minimise the cost of additional cable routing. If suitable Council land cannot be identified, negotiations with third parties will be needed for a long lease.

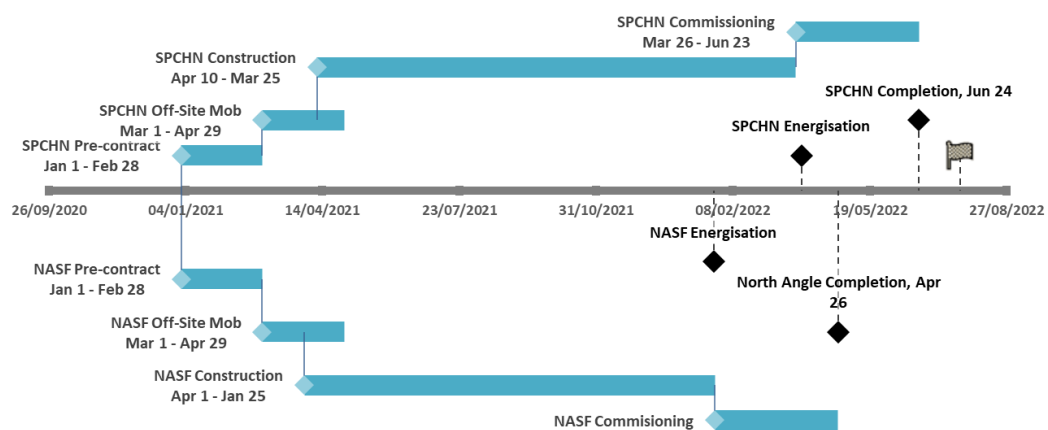
3.5 **Current connection agreement with UKPN.** If the integration of the systems goes ahead the current connection agreements with UKPN would need to be updated to reflect the change. There is a risk that UKPN will not vary our current arrangements. This will put the project further back in the project stack for getting

works delivered which is a risk to the NASF project. This could potentially impact the timeline for delivery of the NASF project, risking cost overruns.

3.6 **Ongoing Management Requirements.** A maintenance contract will need to be procured for option B as the Council will have the responsibility for ensuring the private wire connection operates - safely and efficiently. If the cable is rendered un-operational, a quick response would be required as both the NASF project would not be exporting electricity and the SPCHN would need to purchase grid electricity at higher prices.

3.7 **Projects' Programme.** The existing construction programmes for the projects are both targeting a summer build (during 2021). The construction phase of SPCHN will take approximately three months longer as shown in the high-level timeline and will require electricity from the end of March 2022. It is unlikely that the NASF project will be supplying at this point so it means initial electricity for SPCHN is bought at retail price until the NASF project can supply. Delays on the private wire construction programme will impact both projects financially. The SPCHN's business case is dependent on accessing affordable electricity.

Figure 2 – Timeline for NASF and SPCHN projects



3.8 **Covid-19 Pandemic Impacts.** Additional costs may result during the construction phase whilst accommodating labour and supply chain challenges. It is expected that the rollout of the Covid-19 vaccine in the UK, will mitigate some impacts, many products for energy projects are sourced globally.

3.9 **Brexit.** Although, reaching a trade deal reduced the level of uncertainty, impacts on the supply chain costs along with exchange rates and tariffs are not completely discarded. The evolution of Brexit and Covid-19 risks are and will be closely monitored by the project teams.

3.10 **Opportunity:** The current proposal for a private wire to connect NASF and SPCHN benefits both projects. The route, as identified, does not preclude further commercialisation opportunities for the NASF or the private wire. For example, the opportunity to explore whether other local industrial estates could be supplied by clean electricity via a further private wire could be progressed or scoping how the Council could partner with a licensed provider to supply electricity locally to communities.

4. Next steps

4.1 Undertake an assessment of cost, time and planning risk for progressing the private wire under the solutions set out in 3.2. If a licensed provider can be procured for the delivery of the private wire (and the Council retaining post-construction ownership of the wire) within the budget for the two projects, this will be compared to the solution of submitting a separate planning application. Bouygues will then undertake detailed designs for the High Voltage cable route, private substation and integration works and a cost for the works. This will either form the specification for the procurement of a licensed provider or will form the basis for a planning application and formal integration into the Design and Build contracts for both NASF and SPCHN projects.

4.2 The Council's Rural Estates team will need to identify suitable land for the siting of the private substation and finalise wayleave negotiations and easements with third party landowners for the preferred NASF to Burwell Local substation 6.9km cable route and from the SPCHN to the private substation. The routes will look to maximise the use of CCC-owned land to reduce capital costs.

5. Alignment with corporate priorities

5.1 A good quality of life for everyone
There are no significant implications for this priority

5.2 Thriving places for people to live
There are no significant implications for this priority.

5.3 The best start for Cambridgeshire's children
There are no significant implications for this priority.

5.4 Net-zero carbon emissions for Cambridgeshire by 2050
It is estimated that both projects would prevent the emission of more than 143,000 tonnes of CO₂ over their lifetime through offsetting fossil-fuel electricity generation.

6. Significant Implications

6.1 **Resource Implications:**
The development of the private wire solution, Option B, requires additional staff resource to organise and manage than Option A and has ongoing maintenance and insurance cost implications. However, the longer term benefits for the Council

include further commercialisation opportunities along the route of the private wire and a stronger more sustainable Swaffham Prior Community Heat Project. Resources from rural estates, the energy investment unit, finance and legal will be needed and these costs will be covered through existing development budgets for both projects or through future revenues.

- 6.2 Procurement / Contractual / Council Contract Procedure Rules Implications:
The private wire connection will be built either via a procured statutory provider or by Bouygues Energies & Services who were procured under a mini-competition run under the Refit 3 Framework. The procurement of a maintenance provider will also be required and scoping for this will start once the specification for the HV cable is complete.
- 6.3 Statutory, Legal and Risk Implications:
In addition to section 3 above, there is a residual risk in option B as the Council will be the owners of the high voltage cable, its safety and maintenance.
- 6.4 Equality and Diversity Implications:
There are no significant implications.
- 6.5 Engagement and Communications Implications:
Discussions with landowners and tenants have started.
- 6.6 Localism and Local Member Involvement:
No significant implications
- 6.7 Public Health Implications:
No significant implications

Have the resource implications been cleared by Finance?

Yes Name of Financial Officer: Matthew Rathbone/ Jonathan Trayer

Have the procurement/contractual/ Council Contract Procedure Rules implications been cleared by the LGSS Head of Procurement?

Yes Name of Officer: Henry Swan

Has the impact on statutory, legal and risk implications been cleared by the Council's Monitoring Officer or LGSS Law?

Yes or No Name of Legal Officer: Fiona McMillan

Have the equality and diversity implications been cleared by your Service Contact?

Yes Name of Legal Officer: Elsa Evans

Have any engagement and communication implications been cleared by Communications?

Yes or No Name of Officer: Bethan Griffiths

Have any localism and Local Member involvement issues been cleared by your Service Contact?

Yes Name of Officer: Emma Fitch

Have any Public Health implications been cleared by Public Health

Yes or No Name of Officer: Iain Green

Source documents

Documents

North Angle Solar Farm

- Approval for Grid Connection down payments for energy investment projects, October 2019
- Project update, March 2020 (circulated via email)
- North Angle Solar Farm Investment Decision, 18 December 2020.

Location

- <https://tinyurl.com/y64yk828>
- <https://tinyurl.com/y2ncl6k5>
- <https://tinyurl.com/uo32y6c>
- Available by e-mail

Swaffham Prior Community Heat Network

- Heating Swaffham Prior Community website – updates and newsletters
- Heating Swaffham Prior video
- Swaffham Prior Community Heat Project – Investment Case, 14 January 2021

Location

- <https://www.cambridgeshire.gov.uk/council/meetings-and-decisions>
- <https://heatingswaffhamprior.co.uk/>
- <https://www.mlei.co.uk/projects/swaffham-prior-community-heat>
- <https://vimeo.com/403639185/47ee190c01>
- Internal files

Appendix A: NASF to SPCHN and potential route option

