

Technical Specification for Next Generation Phase 2

1 Background

1.1 Burneside Community Energy

Burneside Community Energy (BCE) is a community benefit society set up in 2015 to “carry on any business for the benefit of the community by facilitating an increase in community ownership of renewable energy and low carbon projects; and through the distribution of energy within the community”.

Since 2015 BCE has raised £580,000 in two share offers to fund the installation of 640kW PV on the roof of James Cropper plc paper mill, which is located in the centre of the village. A further share offer will be run on 2021 to add around 340kW on a new building at James Cropper’s. BCE has also gifted a 20kW PV system to the local primary school from its community benefit fund.

BCE is also planning other community initiatives around energy efficiency of homes and sustainable transport.

1.2 Burneside Regeneration Project

Burneside is a village just north of Kendal, in South Lakeland, Cumbria, with around 2,000 inhabitants surrounding the James Cropper plc paper mill. In 2015, Burneside village carried out an exercise to define what local people wanted the village to become: The Burneside Vision. That Vision aspired to tackle issues such as declining community identity, low desirability and declining community resources.

The Burneside Regeneration Project has developed out of that Vision, and includes redevelopment of the central area to provide a focal heart to the village, as well as two areas of new housing: Hall Park Extension and Willink Field. The three main landowners of the development sites all have links to James Cropper plc: Ellergreen Estate (managed by Mark Cropper), Anglers Inn Trust and James Cropper plc.

In 2017, BCE was awarded RCEF funding to investigate the potential to use waste heat from the paper mill to supply district heating to the village. Whilst this proposal was found to be unviable, the conclusions recommended that the heat might be viably used for the new homes proposed for the Hall Park Extension.

In early 2019, Mark Cropper assembled a team, lead by igloo regeneration and including BCE, to provide ideas and input to inform the development proposals. One of the development sites was also the subject of a RIBA design competition.

Key elements of the redevelopment, supported by the landowners and project development team are the proposals to:

- Make the new homes zero carbon
- Not have a gas supply
- Supply the homes with community-owned renewable energy.

The Covid pandemic caused the entire process to pause during most of 2020 as the landowners dealt with more important priorities. However, a decision by the landowners and their investors is due in December. Masterplanning and draft costing of the first redevelopment area was carried out in autumn 2020 to inform the investment decision.

The redevelopment will have a major impact on the size and life of the village. Communications with village residents is an integral part of the development process. Igloo is responsible for managing that communications process and has run events and circulated progress reports during 2019-20. BCE's project work has been and will continue to be linked into this communications process.

The principles and key elements of BCE's proposal are:

- Low or zero carbon homes with low energy bills
- Renewable energy system owned and operated by a community energy company – for the benefit of all the community
- Potentially a separate Energy Services Company (ESCo)
- Householders are customers of the ESCo and receive excellent customer service
- Residents are engaged in the process of developing this new system
- Householders and residents are increasingly aware of carbon impacts of homes, travel and other activities
- Exemplar development to demonstrate possibilities to other housing developers.

1.3 Next Generation Project Funding

In late 2019, BCE was awarded Power to Change Next Generation funding to investigate the technical solutions required and business model needed to turn the concept into reality, and the Next Generation Stage 1 work was completed in December.

The Stage 1 work has:

- Started to increase the capacity of the BCE Board to manage a project of this scale.
- Developed the project risk register.
- Provided training sessions for stakeholders to make sure the implications of community energy involvement in the housing development were understood.
- Appointed Stephens Scown as our legal advisers.
- Investigated the contractual arrangements needed between the main stakeholders and secured an initial Exclusivity Agreement between BCE and the main landowner.
- Involved BCE in the communications process.

- Developed a high-level model of the energy system to assess the values of different energy flows in the system.
- Developed the specification of work required for the next phase of the project.

This tender is for services to support BCE to deliver the Next Generation Stage 2.

2 The Development Site

The first redevelopment area will be based around the Hall Park Extension site, which is allocated for 72 new homes in the Local Plan, but may have capacity for more homes. 65% of the homes are expected to be for private sale with 35% social housing for rent. Discussions are ongoing with a potential social housing provider.

Construction is unlikely to commence before 2022 and is likely to take 5 years to completion of the site.

The developer is aiming to make the fabric of the homes highly energy efficient, but a standard has not yet been agreed. It is likely to equivalent to be AECB Silver or better but not Passivhaus.

The current proposals do not include individual garages or driveways: the intention is to provide two car barns for private vehicles, as well as a car club (probably EVs), alongside good walking and cycling routes into the village. Burnside is on the National Cycle Network Route 6 (on-road and off-road section from Kendal to Windermere) and the Dales Way walking trail.

The majority of the site is owned by Ellergreen Estate. Some potential access areas are owned by James Cropper plc.

The development is to be set on the north of a field owned by Ellergreen Estate, which slopes gently down to the rivers Kent and Sprint. Outside of the development area, the land in the SW of the field is in flood zone 3, and to the NE is a small hill, both owned by Ellergreen Estate.

3 Energy Options

3.1 Relevant Site Characteristics

It is expected that the only means to generate electricity will be solar PV. The solar output of BCE's panels at James Cropper plc have averaged between 820-870 kWh/kWp (mainly south facing but some E-W roofs).

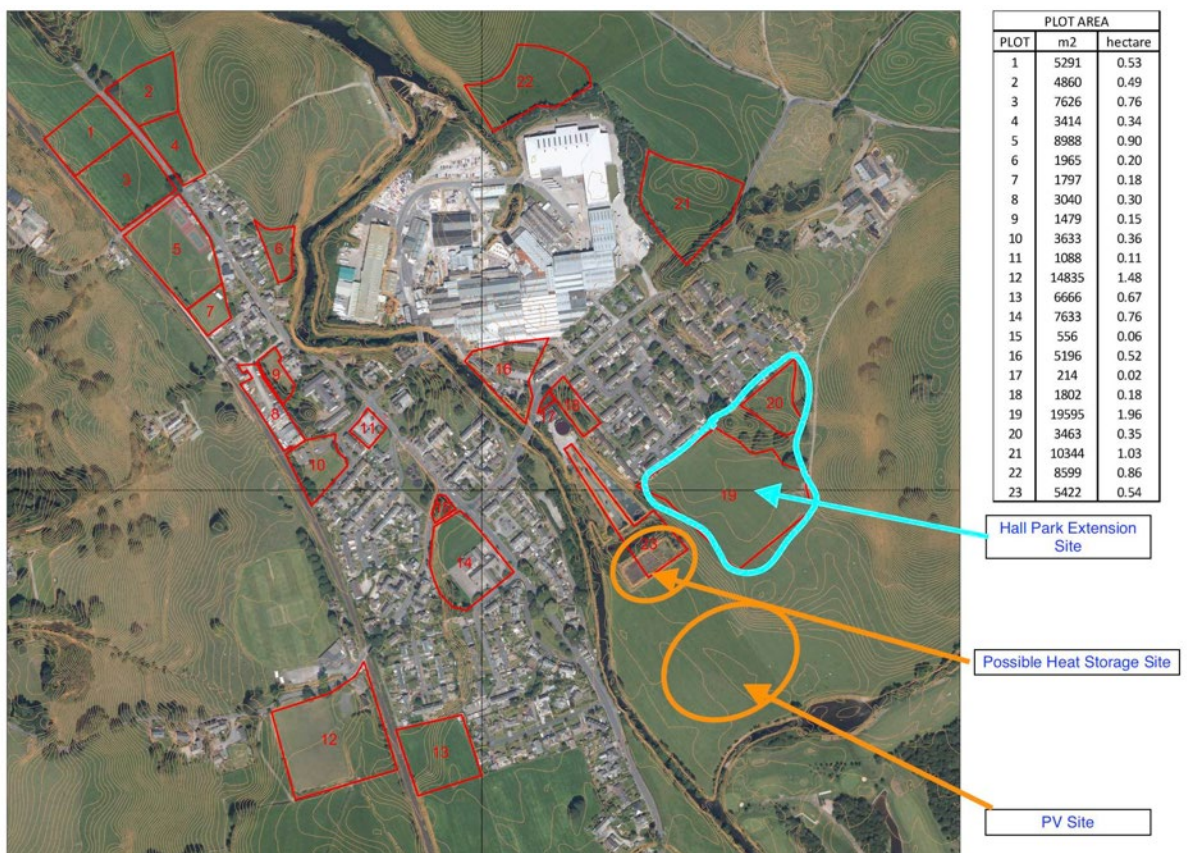
There is a separate proposal from Ellergreen to install 500kW PV to the south of the site, which is planned to feed electricity to the James Cropper waste treatment plant south of New Road. There may be potential for BCE to own some of this generation. There is sufficient land adjacent to this proposed solar installation for at least a further 500kW.

There is interest in investigating a potential wind turbine on the hill to the NE of the site, but, even if feasible, this is not expected to be included in the supply to the site for at least the

first 3 phases of the build, due to the expected difficulties in obtaining both local acceptance and planning approval.

James Cropper’s waste water tank which sits adjacent to one potential entrance route to the site holds approximately 2,500 m3 of water at 18-20C, which could provide between 6,000 – 8,500 MWh per year into a district heating network. The possibility to use this heat has been investigated previously and some of it may be available. However there is a significant risk that changes to James Cropper’s processes will reduce the amount of waste heat produced in future.

To the west of the site are five settling tanks linked to the waste water treatment plant. One of these is redundant and could provide a heat sink for inter-seasonal storage.



3.2 Operational & Customer Requirements

BCE will set up an SPV to operate the system, and will (initially) be the sole energy supplier to the homes. It is therefore in BCE’s interest to specify a high quality energy supply system in order to reduce long term operating costs and risks. The system should have the potential to be installed in modules that meet the demand of each phase of the build, and to incorporate new generation, storage and control technologies as these technologies develop.

It is also essential that the customers feel that the energy system gives them good value and good customer service.

4 Brief

BCE's objective is to provide a renewable energy system that:

- Enables the development to be zero carbon
- Meets the energy needs of householders living in the new homes, including the option for EV charging
- Provides energy to householders at costs comparable with or lower than a typical new housing development
- Provides energy supply and customer service that as a minimum meets the standards set by the Heat Trust
- Optimises the use of on-site generation
- Maximises the value of on-site generation
- Can be managed, maintained and improved economically over the long term
- Provides sufficient return on investment to attract and retain investors, through community share ownership, social lending or a mix of both
- Provides some form of community benefit to other residents in the village.

The energy demand is to include all electricity and heat needs of the properties plus sufficient capacity for electric vehicle charging, taking into account likely growth of that demand. Initial calculations of likely energy demand and supply options will be provided, although we expect the consultants appointed to check this data.

The energy technologies to be investigated are: solar PV, electricity storage, air, ground or water source heat pumps (potentially using locally-generated waste heat), heat distribution network, heat storage, micro-grid, EV charging infrastructure, V2G infrastructure, smart controls.

The business case should not be designed to be reliant on:

- external markets that may be short term, e.g. grid services such as frequency response or flexibility services, or
- government incentives that are likely to have ended before construction is complete (e.g. RHI).

These should be regarded as a useful addition if feasible. However it is highly likely that some form of capital subsidy or grant will be needed but BCE needs to understand the full costs and business case with and without such funding.

BCE needs support from suitably qualified external experts to develop the next stage of the project. BCE recognises that consultants may not have expertise in-house to carry out all the work packages set out below, so welcomes tenders from consortia, provided that overall responsibility for the work is held by one organisation.

We are open to suggestions from consultants on variations to the approaches suggested below.

4.1 Energy System Modelling and Costing

A high level model has been developed to provide an initial assessment of the viability of the energy system. The next phase needs a more refined model to enable the elements of the system to be specified. It should be developed in close collaboration with the BCE team to build on the work already completed.

Outputs:

1. A model that can be used to optimise the design of the energy system and enable an ongoing assessment of its financial viability.
2. Options for a range of different mixes of technologies, with detailed capital and operating costs and pros/cons of each.
3. Recommendations on the optimum specification of the energy supply system technologies (including monitoring, controls and customer metering that at least are compliant with Heat Trust standards).
4. Recommendations on the boundaries between BCE/SPV and householder ownership of equipment i.e. who is responsible for what?
5. Recommendations on the phasing of capital expenditure related to the phasing of the build programme.
6. Recommendations on potential suppliers of the technologies either individually or as a turn-key project.
7. Recommendations on maintenance requirements, potential providers and likely annual costs.
8. Input to the project risk register.

It is essential that BCE is provided with a working financial model of the energy system that we can use to assess scenarios and future changes in the build plan. As such, it should be presented in a format that can be easily manipulated by users (e.g. Excel) and not reliant on a highly specialist programme. It should allow for the addition of future technology innovations and the assessment of different supply, demand and cost scenarios. As a minimum the work programme should include:

- Modelling of half-hourly energy demand of the homes and community buildings, by build phase, including power, heat, and EV charging. (Data on the number, size, phasing and energy performance specification of the homes will be provided.) This should include future scenarios in which demand profiles might change e.g. from increased home working.
- Modelling of half-hourly energy generation. This should include the options of generation fed into the system from privately-owned PV on the roofs of some homes, and the use of waste heat from James Cropper.
- Half-hourly optimisation of the supply of renewable energy between different demands (direct power, heating, electricity storage, EV charging, heat storage) and the resulting requirement for either import or export to/from the grid.

- Modelling of the impact of a proportion of the generation being supplied into the micro-grid from privately owned generation such as PV on some of the roofs of the new homes or excess generation from James Cropper.
- Investigation of the costs and potential suppliers of each technology, including where appropriate, modular installations.
- Assessment of the operating costs likely to be incurred by the operating company, including both the costs of operating/maintaining/replacing the technical system, grid service charges and the service provision costs detailed in 4.2 below.
- Development of a financial model for the operation, including capex, opex and cost of capital, taking into account the operational requirements defined under 4.2 below, and with the ability to assess the impact of different capital investment and operating scenarios.
- Training BCE directors to understand and use the model.

4.2 BCE Operation and Householder Service Design

Alongside the development of the technical project, BCE needs to plan how delivery of the energy to homes will be managed. It is likely that BCE will set up a separate SPV to reduce risk to the existing BCE projects and members. We are open to suggestions on whether that organisation should retain complete control of the operation or contract out elements such as billing, customer service, maintenance etc.

BCE or the SPV expects to be the sole energy supplier for the households, and will wish to retain all households as customers even though they may have the legal right to change suppliers.

Outputs:

1. Costed options and recommendations for the administration system for metering, billing, customer service, call handling, complaint and redress, vulnerable customers, debt and disconnection, payment plans etc including whether this should be kept in-house or contracted out, with potential providers
2. A summary of the service standards the organisation should meet for the supply of electricity and heat (referencing the Heat Trust standard)
3. Recommendations on managing customer data including data security and data collection to underpin customer service (eg customer feedback and satisfaction, waiting times, complaint times).
4. Costed options for system monitoring, management, repairs, emergency response etc
5. Recommendations on the issues likely to be faced on re-sale of the homes or changes in tenancy, and proposals to manage these.
6. Recommendations on the information package to be provided to new and existing householders

7. Recommendations on the structure of the SPV (roles, time required, costs)
8. Input to the project risk register.

The work programme will link to the Energy System Modelling and Costing and should include an assessment of:

- Acceptable unit rates and standing charges for energy sales to customers (and potential purchase from other local generators) and the potential impact of future time-of-use tariffs.
- The best way to deliver high standards of customer service and reliability
- Information on which organisations would be able to run all or part of the customer-facing operation: and an assessment of their experience of working at this scale, as well as customer satisfaction rating.
- Lessons from other small suppliers of heat and electricity, including operating costs, to feed into the risk assessment
- An assessment of potential issues for householders of different tenures e.g. with mortgage lenders or insurers, and how these can be overcome.
- Discussions with the developers and social housing providers about standards of service and how that might affect their ability to sell or rent the properties.
- Discussions with BCE on operational capacity and the balance between in-house/contracted out service provision.
- Policies and procedures the SPV would need to develop.

4.3 Finance Strategy

The aim is to raise capital primarily through community shares. Other finance may be needed such as grants and social finance. BCE will also need to reach an agreement with the developer on allocation of costs which may be shared (e.g. grid connection to the site), or a contribution where the community energy project enables the developer to reduce costs (e.g. no gas supply).

This part of the work programme will define the finance strategy for the community energy element of the development.

Outputs:

1. A fully costed business plan including costs of finance, sufficient to meet the needs of potential investors
2. Defined investment phasing to meet the needs of the build schedule
3. A finance strategy defining the sources of funds, with criteria to be met for each source of funding.
4. Clearly and contractually defined boundaries of the respective financial inputs of BCE/SPV and the developer.
5. Information on any future incentive schemes that are expected within the lifetime of this project.
6. Recommendations on any grant funding available and input to grant applications where appropriate.

The work programme should include:

- An assessment of the options for investing in equipment in stages to meet the needs of each build phase (bearing in mind the risks of delays and the possibility that the build programme will change over time), which should include the benefits and risks of investment in some parts of the system that may need to be fully installed ahead of demand (e.g. heat store).
- Investigation of potential grant funding to contribute to parts of the scheme e.g. Heat Network Investment Project (HNIP), Innovation Funding, Zero Carbon Cumbria Partnership
- Discussions with the developer to agree responsibility for the costs associated with construction of elements of the scheme where there may be an overlap or reduced costs for the developer e.g. grid connection, trenches for services, non-provision of boilers or a gas supply. These agreements will need to be translated into contractual arrangements in conjunction with our legal team.
- Discussions with the developers to investigate the costs, risks, likelihood and contractual requirements related to them constructing the energy system and selling on to the SPV once complete (turnkey project).
- Assessment of whether any other company would provide a similar turnkey project
- Discussions with social finance providers to assess the likelihood of their investment in the project, associated costs and value compared with community share financing.
- An assessment of whether the project is likely to attract investment from private individuals through a community share offer and the minimum share interest that would be required for this.

4.4 Contractual Arrangements

The project will require a number of contracts to be set up between BCE's SPV and other parties, both for the development and construction of the scheme and for the ongoing management of the operation. The consultant will need to work with BCE, BCE's lawyers (Stephens Scown) and all relevant stakeholders to ensure appropriate contracts are in place or prepared.

Outputs:

1. A Service/Development agreement between BCE and igloo (or possibly Landowners) for provision of BCE's services, specifying at least:
 - what infrastructure BCE will be designing;
 - whether BCE or another party will be responsible for installing the infrastructure;

- the owner of the designs and infrastructure, and whether ownership is to transfer at any point;
 - the information which BCE will need to receive to produce the designs;
 - which areas of the project BCE will have input on, and how they will give this input e.g. regular meetings, consultations etc;
 - what rights BCE has to reject any proposals from igloo/Landowners and the mechanism for resolving any disputes;
 - right of access to the land in order to complete its work;
 - that the development must use renewable sources and not be connected to the gas grid, unless BCE exits the project.
2. A long-term lease prepared and agreed with the landowner for specific areas of the site, including some communal roof-space, right of access to the site and for provision of energy services across the land to the homes and other buildings.
 3. Terms of a Power Purchase Agreement for purchase of excess electricity from privately owned PV systems if appropriate (either householders or other local suppliers e.g. Ellergreen).
 4. Terms of a Heat Purchase Agreement for heat supplied by James Cropper plc if appropriate.
 5. Terms of an Energy Supply Agreement for the householders supplied by the SPV, and potentially the social housing provider.
 6. Terms of an agreement to supply electricity for EV charging.
 7. Potentially terms of an agreement with funders.
 8. Potentially terms of a lease with the social housing provider for use of roof-space for PV.
 9. Specification for what needs to be included in a procurement/construction contract for the construction phase.

It is possible that other agreements will be identified during the work programme.

The work programme will involve significant consultation with all relevant parties, including the landowners, developers and their solicitors.

4.5 Communications and Reporting

This is a complex project that requires considerable communication between the parties involved as well as the community, to make the development process run as smoothly as possible. In addition to the outputs detailed in each section above, the consultants will be expected to:

- Collaborate closely with the developer, development team and other key stakeholders.
- Provide input to the consultation process in the village.
- Work closely with the BCE team.
- Share information with other projects funded by Next Generation on a regular basis
- Provide feedback to the Next Generation funders
- Provide regular reports to the BCE board.

It is possible that the project may be halted during this phase due to, for example:

- A clear view that it cannot be made viable for BCE/SPV
- Significant delays or changes to the development programme scale or timescale.

In that case, the consultant will be expected to provide BCE with a summary of the work completed and relevant learning to feed back to Next Generation and the developers.

4.6 Project Management

The consultant must demonstrate an ability to manage such a complex project, pulling together information from all the different threads to produce a plan for delivery of the project.

Overall outputs:

- Technical system design
- Operational system design
- Business plan
- Finance strategy
- Contractual arrangements.

5 Timescale

This phase of work for BCE must be completed before the end of the Next Generation funding programme in September. In order to finalise the grant payments, the final report for this phase must be completed by the end of August.

However, the energy project also needs to dovetail with the development and construction timetable for the housing build. At present this is planned as:

- Stakeholder engagement and development of the brief – January to August 2021
- Detailed design, technical reports and financial appraisal – April to August 2021
- Submit planning application - Summer 2021

BCE will need to be in a position to make a decision in principle on whether to go ahead with the energy element of the development before the planning application is submitted.

The development programme suffered delays in 2020 due to Covid-19 and it is possible the process will slip further. In that case the deadline for Phase 2 set by Next Generation will still need to be met.

6 Budget

TO BE DISCUSSED

7 Tender Requirements

TO BE DISCUSSED