Burneside Community Energy:

Developing a Net Zero Carbon Community Owned Energy System for New Housing

Delivery Plan for Next Generation

February 2020 v3

Key Contacts

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1 Background & Introduction

1.1 Background to the village of Burneside & Burneside Community Energy

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 create a "world-class village" by tackling issues such as declining community identity, low desirability and declining community resources. It also identified opportunities to harness renewable energy for local benefit. So in November 2015 Burneside Community Energy was set up to deliver this.

BCE's objects are 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.

BCE has issued two share offers so far, raising £580,000 and has prioritised village residents and Cropper's employees. Of its 103 members two thirds live in the village or within 5 miles, and almost 90% live in Cumbria. Each member has one vote, and the minimum investment was set at £250 to encourage accessibility. The board is elected by members and the directors are active in village affairs and events, maintaining links with the Residents Association and Parish Council.

During 2019 BCE held two village meetings to discuss ideas, projects and progress. BCE actively engages with non-members through the Community Benefit Fund: this is managed by a sub-committee of local residents who determine its use. The BCE community benefit fund has paid for the recent installation of 20kW solar PV on the local primary school, which was launched by the pupils and community at a celebration event in November 2019.

In total, BCE has installed 680kW solar PV on roofs at James Cropper PLC, in two phases: 250kW installed in 2015 and a further 430kW during 2019. A further scheme of up to 250kW is planned for a new building during 2020 and will see another share offer.

In 2017 BCE received Rural Community Energy Fund support to carry out a feasibility study into a potential Burneside renewable heat and district energy network for the village. Quantum Strategy & Technology carried out the study which found that retrofitting a district heat network for existing homes was not viable, but identified potential for renewable energy technologies to supply the potential new build.

In 2019 BCE was awarded £15,000 *Powering Our Communities* funding from Electricity Northwest to investigate how to ensure that the new housing in Burneside is supplied by locally owned, zero carbon energy. Quantum was commissioned to carry out this piece of work, building on from the previous feasibility study. This project has so far reviewed lessons from similar schemes in the UK and internationally, developed an options analysis and carried out an initial assessment of energy demand and potential supply needs. We have worked with the developer, igloo regeneration, from the start, contributing to the design brief.

The stages of development have been mapped and are now being refined to identify the key questions that need addressing in the Next Generation delivery plan.

1.2 Method to develop the Delivery Plan & Project Ownership

BCE directors are leading the project for BCE and met as a board in November 2019 with Quantum to discuss lessons learned to date under the ENW funding and to inform the approach to the Next Generation phase of the project. This included revisiting BCE's fundamental values and objects, and outlining some of the risks to BCE.

BCE are the project owners and are working with Quantum as consultants on Phase 1 as a continuation of the ENWL funded project. All decisions will be signed off by the BCE board. BCE will conduct a procurement process for Phase 2 project management support and procure an appropriate project team to assist the voluntary board, which may or may not include Quantum.

BCE and Quantum attended the Next Generation start up meeting in Bristol on 3 December 2019 and made links to the other Phase 2 projects. PEC's new housing project, CREW Energy's heat pump experience and Carbon Co-op's modelling and data management projects in particular are of relevance to BCE's project. We plan to share information with PEC in particular and have had an initial discussion with them about their project and agreed to stay in touch during the Next Generation work.

To produce this report we have addressed the steps and challenges we will need to address to further:

- Define the technologies, energy balancing, controls & contracts including potential consultants and experts to provide support
- Develop the business case including ownership & governance models for installation and service delivery
- Raise finance
- Develop organisational capacity
- Install in partnership with developer.

We have built on the information gathered so far, which identified experts, technologies, examples, issues and options.

1.3 Delivery Plan

This delivery plan includes:

- A description of BCE's Community Energy Business Model for the Burneside Housing Regeneration project and the benefits it will bring to the wider village community
- A breakdown of the project stages and the resources required
- Key milestones in progressing the project
- A risk assessment and mitigation framework.

2 Context

Burneside is a village of around 2,000 people 2-3 miles to the north of Kendal. The area of benefit for BCE covers the two local parishes (Strickland Ketel and Strickland Roger). The village has a shop, pub, primary school, the Bryce Institute (community hall) and numerous sports and social clubs. Burneside was built around the James Cropper paper mill (established 1845), although very few employees now live locally. It is served by the railway line from Kendal to Windermere and has an infrequent bus service. It is located on the Dales Way walking route and a National Cycle Route.

Geographically, it sits in a slight valley either side of the river Kent, with the river Sprint just to the south. The village suffered severe flooding in the 2015 Storm Desmond, badly damaging the main bridge, which was not fully repaired until 2019, and several homes. A large number of homes and some areas of the Mill are in Flood Zone 2. It is just outside the Lake District National Park.

The centre of the village consists of typical Cumbrian slate homes, around the river, church and mill, and running out of the village along the main access roads, with infill of individual homes. There are areas of 1930s terraces and semis, and close to the centre are larger areas of 1960s/70s terraces and semis, predominantly in the typical social housing style of the period (Hall Park, Howgill, Chapel Field). Also within the centre is an area of newer homes (St Oswalds View, 1990/2000s) and a sheltered housing unit. Further out are bungalows and a development off the southern road slightly detached from the village (Carling). The housing is low/medium density with gardens and grassed communal areas. In the village centre are three large areas of open space: the school and playground, churchyard, and riverside/Croppers waste water holding area. The Vision study (see below) identified the lack of a village centre as a concern.

A large proportion of the homes were built as social housing, and many of these remain owned by Housing Associations. South Lakes Housing own all the housing stock on Hall Park estate and Progress Housing own significant housing stock throughout the village (along New St, in the village centre and parts of the Howgill and Chapel Fields estate).

An Action for Communities in Rural England (ACRE) reports from 2013 summarised the community as:

- Broadly average English community
- Slightly higher population over 65
- Remote community with significantly greater travel times to important resources such as supermarket, GP surgery and secondary schools
- 6th Decile Deprivation (10th being most deprived)
- Below average claimants for all DWP benefits
- Significantly lower than average quantity of homes in Council Tax band A with higher than average homes in bands ‘E’, ‘F’ and ‘G’
- Residents perceive low-crime rates, and high degree of responsibility
- Population has higher than average civic- engagement.

The Local Plan designates two areas for housing development: land to the south of the Hall Park estate and land to the NW of the village on and around the current recreation ground (Willink Field). There is also potential commercial development land to the north of the village and redevelopment potential in some central areas. Most of this land is owned by the Ellergreen Estate, controlled by the Cropper family. Other landowners are James Cropper plc and the Anglers Inn Trust. Mark Cropper has an influential or controlling stake in all of these organisations.

In 2015, these organisations together with the Parish Council commissioned a major study and consultation aimed at providing ideas in how to improve the village, to input to the Neighbourhood Plan: the Burneside Vision. This identified key issues in the village as:

- having declining community identity due to severance of relationship between village and mill
- disjointed and sparse village core
- poor quality approach and arrival experience
- low desirability and declining community resources
- low quality street furniture and signage
- existing planning policy that fails to protect the Kendal Green Gap and has the potential to contribute to further decline.

The aspiration highlighted in the Vision was to transform Burneside into a "world-class village".

In early 2019 Ellergreen Estate commissioned a team lead by igloo regeneration (the Regeneration Executive Group) to develop more detailed proposals for the village, including regeneration of the village centre and plans for new low carbon housing on the allocated land and a few additional plots. BCE has been involved in this process throughout.

A number of development sites and potential energy supply sites were proposed.

The Regeneration group initially focussed on the site to the north of the village, which was expected to form the first phase of the development. The site was part of a RIBA competition run by Great Places Lakes and Dales to identify suitable housing for the site. BCE was involved in specifying the brief for that competition, which included "Homes that are intelligent, connected and enable a zero-carbon lifestyle including community ownership of energy supply systems and a fabric-first approach to energy efficiency."

Since then the phasing has changed with site 2 now expected to be the first phase, followed by site 3 then site 1. This has brought South Lakes Housing in as a potential development partner, as they own most of the adjacent site 2. That site will have a high proportion of affordable homes.

Assets:

- A strong core of people actively working to improve the community.
- Landowners who have control over the development sites are deeply embedded in the village, expressly support zero carbon development and are involved with BCE, either personally as members or through professional contracts (James Cropper plc).
- Previous studies into the issues the issues that need to be addressed (Vision) and low carbon options for the village (BCE WRAP-funded study).
- A development team already engaged, including BCE, with "zero-carbon" and "community ownership of energy" specified in the development brief.
- Support from Electricity North West, providing funding from its Powering Our Communities Fund to support early work on this project, and ongoing interest in developing a solution to grid capacity constraints for the village.
- A supportive local authority (South Lakeland District Council).

Things to clarify/find out (this list is not exhaustive):

- Latest update on the Neighbourhood Planning process and how this might affect the developments: this is about to re-start after failing to conclude a plan a couple of years ago.

- Latest thinking on the phasing of the development sites and number of homes/commercial units: this has been in flux but is due to be confirmed in February-March.
- How far the developer will go in reducing energy demand in new homes through the design and build quality (and for example thoughts on off-site manufacture).
- Further village consultation on the development plans: ensuring any reputational risk to BCE is minimised.
- Technical solutions for a net zero carbon energy supply, cost analysis and risk assessment.
- How the potential solar farm might integrate with the community energy plans.
- Quantifying the grid capacity constraints for each site (separate supplies to each side of the village, and linked capacity constraints in Kendal).
- Whether an electricity link to James Cropper plc might be mutually beneficial (as part of the need to minimise grid upgrades).
- Appetite for ownership of the energy system for the new developments among residents: BCE members know about the scheme but have not been specifically asked whether they would be willing to invest as there is no business plan yet.
- Long term operating plan for the energy supply system.
- Finance available for the installation and operation of the energy system: terms and conditions, phasing, constraints, commercial and grant funding potential.
- How to find and make best use of external expertise.

3 Vision

The project is to develop a viable community-owned energy supply to new homes in the village.

Up to 180 new homes, plus workspaces, are likely to be built in Burneside in the next 10 years. They will not be community-owned.

However, this new housing gives an opportunity for BCE to:

1. Set up the systems needed to supply energy to these homes
2. Demonstrate that a community energy supply model can work
3. Investigate how to offer the same opportunity to existing homes.

The plan is to have a self-sustaining local supply business using a combination of local generation and supply/demand balancing. Income will be generated through sales of electricity and heat, ideally at or below market rates. Capital will be raised through a combination of:

- Community shares
- Social investment loans
- Grant funding (possibly from HNIP if heat network is identified as the best option)
- Developer contribution (offset against reduced costs for energy supply).

The new homes will be designed to be highly energy efficient, but not zero carbon. Our project aims to close the gap to make them at least zero carbon.

Our aim is to avoid embedding carbon-dependent technologies in the new development (e.g. gas boilers) by offering an alternative funding mechanism for low carbon energy. The homes will be all-electric: private wire is possibly the best option but we need to investigate use of the grid for parts of development and to expand to other residents. However, this will place additional demands on the grid which already has capacity constraints – which may limit the potential to build the homes. This project aims to demonstrate how management of integrated energy supply and demand can minimise the impact on the grid.

3.1 Project Technical Options

There are a number of different technical options and through the next phase we plan to define the most suitable system.

Option 1: Electricity supply only

- Electricity generated by roof-mounted and ground-mounted PV (unlikely to be any opportunity for wind in the vicinity and hydro potential already in use by James Cropper plc)
- Distribution by private wire
- Centralised battery storage and electricity supply/demand balancing system
- Individual privately-owned heat pumps in homes
- Individual privately-owned EV charging in homes
- Tariff/information system to encourage use when generating.
- Centrally purchased electricity to top up to meet demand
    - option to integrate with own supply to define own time of use tariffs
    - option to purchase excess generation from James Cropper.

Option 2: Electricity and heat supply

- Electricity generated by roof-mounted and ground-mounted PV
- Distribution by private wire
- Centralised battery storage and electricity supply/demand balancing system
- Individual privately-owned EV charging in homes
- Central supply of heat via large scale heat pumps in energy centre and district heating (DH) network
- Inter-seasonal heat storage to reduce electricity demand in winter
- Tariff/information system to encourage optimisation of use of on-site energy generation
- Centrally purchased electricity to top up to meet demand
    - option to integrate with own supply to define own time of use tariffs
    - option to purchase excess generation from James Cropper.

Option 1 is the cheapest system, but is unlikely to allow us to use a high proportion of the locally generated energy on site. Option 2 is considerably more expensive but may allow increased revenue. However, we want to use Next Generation support to provide external input on the costs and benefits of each option to determine the final design.

The table below shows our initial estimate of the electricity demand and generation required by the homes. This shows the annual figures – obviously the daily and seasonal variations in demand will significantly affect how much locally-generated PV electricity could be used.

	Hall Park Ext	**Willink Field**	**Central**	**Total**
Homes	*115*	*40*	*25*	*180*
Energy Demand kWh/year				
Heat Demand - homes	517,500	180,000	112,500	810,000
Electricity for Heat Pumps	129,375	60,000	37,500	226,875
Power Demand - homes	345,000	120,000	75,000	540,000
EV charging demand	86,250	30,000	18,750	135,000
Total Electricity Demand	560,625	210,000	131,250	901,875
Electricity storage & distribution losses	12%	12%	12%	
Total Electricity Supply Required	637,074	238,636	149,148	1,024,858
PV Capacity Required kW	796	298	186	1,281
PV on roofs max kW	345	80	38	463
PV ground mounted	800	0	0	800

3.2 Value proposition

- Supply of net zero carbon energy to homes (and businesses) in Burneside
- Energy supplied at or below market rates
- Warm homes with low energy bills
- Living in a zero carbon home
- Membership of and a say in running the organisation supplying their energy.

3.3 Revenue model

Income from:

- Sales of electricity (and heat?) or service charge to homes and businesses
- Sales of EV charging services
- Potential income from grid services (but not planning to use this as the primary basis for the business plan).

Expenditure:

- Operating costs:
  - maintenance, repair,
  - management, administration, insurance, provision of customer services etc
  - electricity imports & grid costs.
- Finance costs:
  - Servicing loans/share interest
  - Capital repayment

The tables below show the initial basic business model for Option 1. We have yet to gather sufficient cost data on Option 2 to be able to model that. We are aware this model is based on a set of assumptions and costs that need testing during the next phase.

Option 1: Capital Costs

Homes	*180*
PV system	720,000
PV - ground mounted	
Private wire, metering, connections	400,000
Battery storage	400,000
Total Capex	1,520,000
Development Costs @ 10%	152,000
Total Project Costs	1,672,000
Funding Sources	
Community Shares	1,392,000
Developer contribution	180,000
Next Generation (development costs)	100,000
Total	1,672,000

Option 1: 20 year financial model

Income	
Electricity Sales	3,294,648
Exported Electricity	232,407
Interest	54,448
	3,581,503
Operating Expenditure	
Administration & insurance	308,358
Maintenance, repairs, replacement	401,601
Electricity purchased & grid costs	515,060
	1,225,019
Gross profit	2,356,484
Share interest	679,296
Community benefit	67,930
Share repayment	1,392,000
	2,139,226
Project surplus	217,259

3.4 Market opportunity

- Capitalising on the fact of the homes being built in the village: a one-time opportunity to install the most cost-effective net zero carbon energy supply
- Potential to purchase excess electricity from James Cropper plc to contribute to balancing the private wire network
- Limited market for expansion, unless a viable mechanism can be found to sell electricity to other village residents
- Supports a market opportunity for the Community Energy sector to replicate or learn from.

3.5 Competitive environment

- Electricity sales: normal licensed suppliers. The community energy supplier will need to demonstrate a competitive advantage for customers which may be on cost, customer service, community, environment, novelty or a combination of these.
- Developer or private investment in the net zero carbon energy supply: the likelihood and risk of this will be explored in the business plan.

3.6 Competitive advantage

In the development/installation phase:

- Opportunity to access support and funding not available to private developers
- Locally-rooted community organisation
- Existing involvement in the development process.

Operating phase:

- Locally-rooted community organisation
- Customer switching inertia: being the supplier at the point the homes are first sold.

3.7 Market strategy

- An optimised net zero system designed with householders in mind using Service Design Blueprint putting people at the heart of the energy system in their homes and community
- Enabling customers to be comfortable, healthy, flexible, and as high tech or hands off as they wish according to their lifestyle stage and preferences
- Fair: meeting or exceeding industry codes and standards
- Providing excellent locally based customer service: reliability, access to rapid repairs etc.
- Green and ethically owned, putting back into the community

3.8 Organizational development

- As work progresses, we will assess the best form of organisation to deliver and run the energy system. This may be BCE as it stands, a subsidiary a joint-venture, a different community based organisation etc.
- Part of the project will be to assess the organisational, legal, financial and contractual elements that influence the overall design.
- Ultimately the aims are for community benefit, net zero carbon and a sustainable business model.

4 Impact

4.1 Impact on BCE

The realisation of the business model will enable BCE to:

- Make use of the opportunity offered by the regeneration project to increase the supply and local use of renewable energy
- Play a wider role in developing a zero carbon Burneside
- Develop a model for future opportunities such as providing electricity or EV charging for the wider village
- Demonstrate a model that could be used in housing developments elsewhere.

4.2 Environmental and/or social benefit to Burneside's local community

The net zero carbon housing development's energy system will benefit Burneside's community by:

- Reducing CO2 emissions and reducing residents' carbon footprint (indirect benefit over the project lifetime: at least 20 years up to 100 years; number of houses not yet finalised)
- Contributing to the sustainable regeneration of Burneside to create a direct social and economic benefit to the wider village (benefitting residents and businesses; over the next 5 – 7 years; 2,000 residents).
- Helping reduce local pollution by using all electric heating and promoting EV ownership.
- Demonstrating and providing information to other residents on low/zero carbon energy system potentially inspiring them to consider improvements to their own homes.
- Attracting visitors who want to find out about the net zero carbon energy system, potentially spending money in the village (this has been a significant impact at Lancaster Co-Housing).
- Supporting a small number of jobs in the local area; including installers, electricians, maintenance engineers, and administrative roles in running the energy company.
- Attracting future investment into other similar or related schemes; localised innovation tends to attract interest in further projects/funding.

4.3 Contribution to the community energy sector

The net zero carbon housing development's energy system will benefit the community energy sector by:

- Sharing lessons on the process of developing, designing, financing, installing and managing the system through a learning journey case study.
- Sharing the financial strategy/modelling inputs and assumptions (which will be provided in the business model and share offer) with a commentary for other community energy organisations
- Share the lessons in working with a wide range of stakeholders and different residents groups – producing a stakeholder map and contract map.
- Hosting learning visits for the sector or producing a learning resource, such as a short film.
- Collaborating with PEC on their Next Generation journey as many of their lessons will relate to the same idea, this would produce a more comprehensive information pack, rather than separate unrelated documents.

4.4 Wider benefits

Decarbonising heat in buildings is one of the major challenges in delivering the UK's net zero carbon target by 2050. It cannot be delivered through national action like grid decarbonisation which can be achieved largely by off-shore wind capacity. Net zero carbon heat has to be delivered at a local level and requires a step-change in attitudes, knowledge, skills and financial models. A range of stakeholders are needed to make this happen, including housing developers, construction professionals, planners, elected council members and communities.

The Committee on Climate Change's report *UK Housing Fit for the Future?* identifies heat decarbonisation as being met by a combination of electrification of heat, using heat pumps; district heat networks; hydrogen and biomethane. This will have to be delivered in combination with high levels of energy efficiency in new homes, and retrofit in existing homes.

Policy to deliver decarbonised heat has not yet been developed by the government; nor have business models and there is a lack of experience and clarity in the construction, planning and investment sector to deliver this. Amey's White Paper #2 published in January 2020, *Net Zero 2050 – can the UK deliver a locally-led revolution to decarbonise our built environment?* outlines some of the challenges and recommends bringing together developers, planners and investors to inform government policy.

The Future Homes standard, currently under consultation, provides for higher building fabric energy efficiency standards with on-site renewable generation and heat pumps and new homes cannot be connected to the gas grid from 2025, in just five years' time.

The Burneside Regeneration project will inform not only the local housing development, but will provide a pioneering model that will support other forward-looking developers/landowners, planning officers and community energy organisations in demonstrating, de-risking and promoting decarbonised heat in new homes. Together with PEC's new development, the BCE Regeneration project will be able to provide impartial lessons and information to support other organisations in the public, private and community sector trying to achieve similar aims.

All housing developments are unique because of local conditions; so the BCE Regeneration approach is unlikely to be entirely replicable. But it will provide replicable or transferrable information on:

- heat and energy demand in new homes at various standards
- options analysis for types of decarbonised heat and power technologies and service delivery
- scheme costing, business case and financial modelling
- project development stages and critical pathway
- lessons on partnership and joint delivery
- community benefits

This will be useful for other to private developers, landowners wishing to develop 'green' housing schemes, local authority planners making the case for low/net zero carbon housing developments and community land trusts. There is a lot of interest in this scheme already from a range of people including a senior planning officer conducting masterplanning for a 4,000 home phased development in the north of England, other community energy and community land trust groups and other Cumbria-based land owners.

5 Outcome / Objectives

Building on previous options assessment and lessons learned from other projects, our objectives and milestones for the next 18 months are shown in the attached spreadsheet and outlined below.

5.1 Define BCE roles and oversight of the project:

Clarify Next Generation project management/reporting to funders, contract management, technical input, local input, communications, reporting and payments.

Update and refine the risk register.

5.2 Development Sites:

Work with the developer to clarify the latest plans for which development sites will be taken forward in which order including: numbers of homes/employment sites, tenure and phasing.

Milestone: We know what sites, housing numbers and phasing we need to model for.

5.3 Contract Mapping:

Carry out stakeholder contract mapping to include:

- Scope and potential changes to this
- Roles/responsibilities; who takes final decisions on what;
- Communications channels and protocols;
- Decision timetable;
- Construction timetable and key information/decision points;
- Procedure and responsibilities for specifying, procurement, appointment and management of technologies and contractors;
- Financial responsibilities and payments;
- Insurances;
- Joint & separate risk assessment and responsibilities;
- Project planning & management;
- What and when legal agreements are needed;
- Plus: anything we have missed – the unknown unknowns.

We would like to appoint an advisor/lawyer to support us in this.

We will need to work with multiple stakeholders (others may be added):

- Land Owners: Anglers Inn Trust, Ellergreen Estates, James Cropper
- Development Manager: igloo regeneration
- Executive Group: igloo, Farrer Huxley (landscape), BPR Architecture (design), Civic Engineers (civils & flood management), BCE (energy), Mark Cropper (clients)
- Potential Development Partner: South Lakes Housing
- Contractors: surveyors, planners, builders, trades, energy system installers, inspectors etc

Outcome: We (and all other stakeholders) understand and manage BCE's contractual relationships with the stakeholders for the development phase and have drafted legal agreements (even if simply Heads of Terms at this stage) including an Exclusivity Agreement/developer agreement for the community energy system.

Milestone: Signed agreements setting out roles & responsibilities and other contracts required have been identified.

5.4 Carbon Literacy for New Developments: Training

Initial engagement with some of the project partners has demonstrated that a fundamental understanding of climate change, carbon emissions, energy systems and housing standards is needed to successfully embed the net zero carbon aims of the development. We will invite key stakeholders to participate in Carbon Literacy standard training including: igloo, landowners, architects, South Lakes Housing, SLDC planners, BCE directors, local groups such as the Neighbourhood Planning team & Parish Council, likely contractors and possibly external stakeholders. Additional e-learning sessions can be taken up by new stakeholders as they arrive into the project.

This can be provided by Cumbria Action for Sustainability and Cooler Projects. The training resource will then be available for use by other organisations such as local authorities, developers and community land trusts as well as community energy organisations.

We may even aim to be the first Carbon Literate housing development!

Milestone: Main Stakeholders are certified as Carbon Literate. Carbon Literacy for new Developments training programme developed.

5.5 Specifying External Support Requirements

Based on the technical work done to date under ENWL funding, we will draft a brief and specification for external support. Using a tightly prescribed description of outputs and outcomes will ensure that external contractors and experts provide us with the technical and financial information for comparison and costing. This means we will get the assumptions and inputs we need to carry out our own financial modelling.

We will add to the list of already-identified contractors and experts and will contact them to ask for them to either quote for consultancy work or to attend a workshop/solutions session. This will enable us to work with contractors who do not carry out consultancy work, but who have installed community and local energy systems and operated them e.g. EnergiSprong, Vital Energi and Kensa or Joju Solar as well as consultants who can carry out paid modelling work such as Clean Energy Prospector and LEDA.

We have agreed to stay in touch with the team at PEC who are likely to be working on similar specifications on their housing scheme in order to share information. We have included an additional sum in the set-aside budget for travel/event attendance.

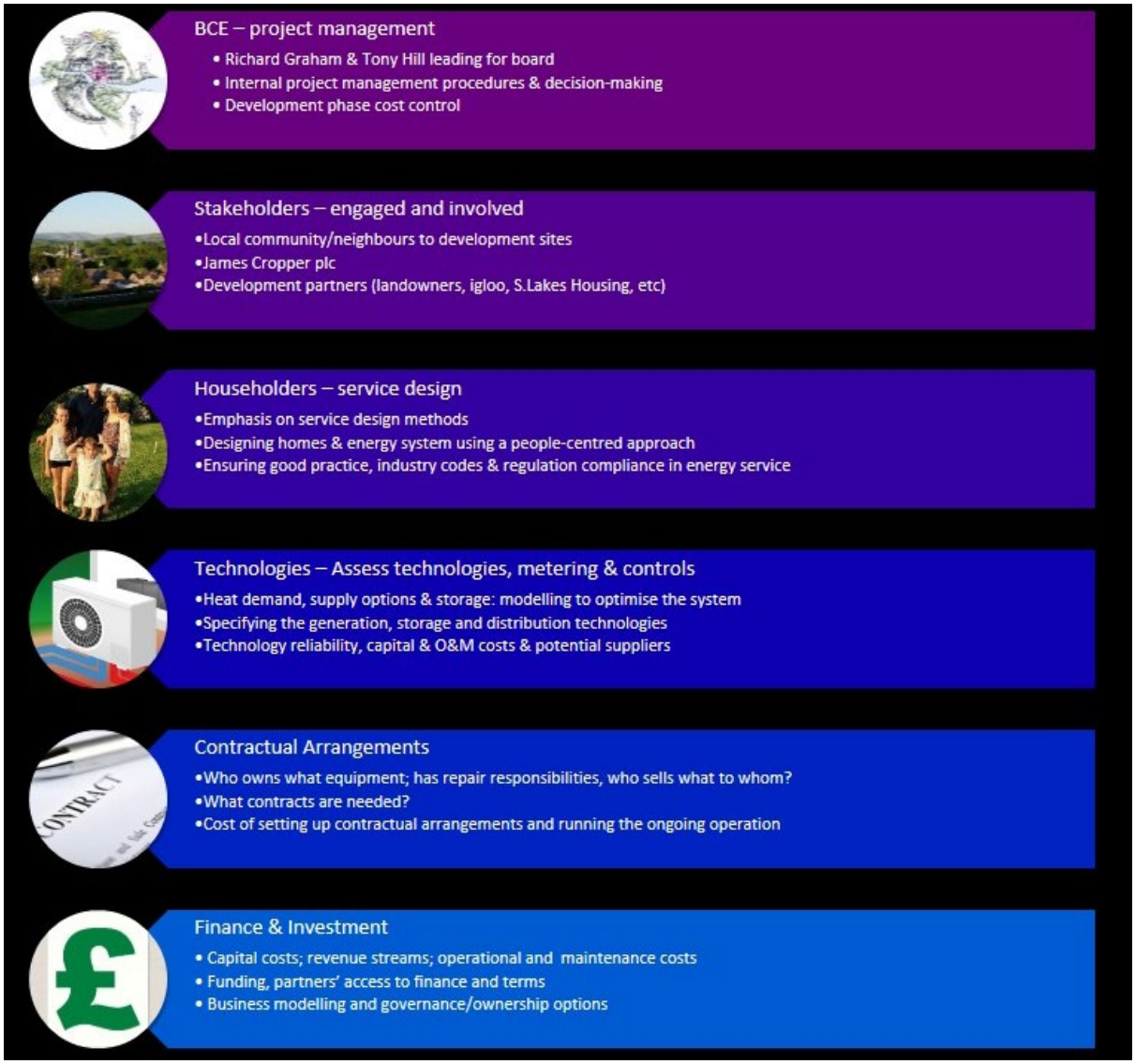
We will also assess the Project Management requirements, skillset and providers for Phase 2 of the project, and pull together a Project Team including Project Management to be procured through three quotes.

Milestone: brief and specification drafted with list of contractors contacted to quote.

Milestone: project team identified, including Project Manager.

5.6 Phase 2. Specifying the Project

Based on work up to date and agreed site definition we will carry out simultaneous workstreams as shown in the diagram below:



The outcome of this significant phase will be that we have a modelled system, costs and contract analysis to develop the wider community energy business case. Additionally we will have buy-in from igloo and its architect and the development client at this stage for the preferred approach. Community and other stakeholder engagement will have taken place.

A critical issue for this project is the phasing of the build programme which could take up to 10 years for delivery of the full 180 homes. We will ensure that the technical and operational specifications are designed to minimize the risks to BCE at each phase, including specifying modular design where possible, and ensuring risks are shared with the developer/landowner in the development contracts. All of the design/development work in this first stage will contribute to the later phases.

Milestones:

- **Effective BCE Project Management**
- **Stakeholder mapping, communications plan, events providing stakeholder feedback**
- **Service Design Blueprint carried out with information on regulation and excellent customer service delivery model to inform operational plan**
- **Technical system design work has produced a recommended Outline System Design**
- **Contracts modelled and some contracts signed**

- **Operational system design and associated contracts developed and costed**
- **Finance Strategy developed**
- **Final fully costed system design produced and preferred delivery contractors identified**
- **Summary report of the above with overarching recommendation for the next steps.**

5.7 Phase 3. Planning Application Submitted

igloo plans to submit the Planning Application by the end of 2020. This will include the energy system plans. By this stage we will need to have completed the detailed design and costing of the energy system, and agreed the contractual and management arrangements.

Further outcomes and objectives will be developed during Phase 2 for Phase 3 as many of these will depend on the findings and recommendations from Phase 2. We have outlined some steps in Phase 3 and 4 in the Delivery Plan chart below.

5.8 Phase 4. Delivery Plan and Dissemination

We will continue to plan and manage the delivery of the project through to completion of the build.

Alongside this we will write up and share our experiences with the community energy sector and wider audiences such as housing developers and community land trusts. The details will be developed further into the project but could include:

- Sharing lessons on the process of developing, designing, financing, installing and managing the system through a learning journey case study.
- Sharing the financial strategy/modelling inputs and with a commentary for other community organisations
- Producing a stakeholder map and contract map.
- Hosting learning visits for the sector or producing a learning resource, such as a short film.
- Collaborating with PEC on a more comprehensive information pack covering the two projects.

6 Activities, Timeframe & Resources

BCE: Next Generation Delivery Plan

Phase	Dates	Duration	Deliverables	Proportion	Total	Grant payment trigger	Evidence of milestone delivered
R&D	Nov 19 - Feb 20	3 months	Delivery Plan	n/a	**£2,400**	To be invoiced Feb 20	Delivery Plan
Set aside	all		Travel, Next Gen programme meeting attendance	6%	**£6,000**		Claims associated with each event
Phase 1 (delivery)	Feb - April 2020	3 months	BCE Roles & Oversight	1%	£1,000	To be invoiced Feb 20	Note clarifying BCE roles, communications and processes for managing the Next Gen project; agreed by BCE board
			Clarify development site phasing	1%	£500		Email from Development team documenting which sites BCE to model
			Stakeholder Contract Mapping	3%	£3,000		Contract mapping report; signed agreements setting out roles & responsibilities
			Update and refine risk assessment	1%	£500		Risk Register
			Carbon Literacy for New Developments: Training for major stakeholders e-learning + workshop	2%	£1,500		Mandatory Carbon Literacy Training for all key stakeholders
			Community consultation planned by igloo	1%	£1,000		Feed into the igloo planned Community Consultation
			Specifying the Project: specifying the details of Phase 2 and project team(PT) /external support required	3%	£2,500		Brief and specification drafted. Prescriptive description of outputs and outcomes required to enable comparison and costing. List of contractors & experts to be contacted with options for workshop/solutions pitch &/or for consultancy work.
				Total	**£10,000**	**To be invoiced Feb 20**	
Phase 2	May - Oct 2020	6 months	BCE Project Management	2%	£2,400	To be invoiced May 20	Board minutes
			Project Communications and Project management	4%	£4,000		Project management/comms notes.
			Stakeholder engagement mapping, communications planning, events	3%	£2,500		Stakeholder map and engagement plan to take scheme through to delivery; plus report on ongoing s/holder engagement during this Phase.
			Householder Service Design	2%	£1,500		Service Design Blueprint options drafted; Review of industry codes, expected regulation, CAB Zero Sum report recommendations, options for compliance (plus implications for governance & service delivery)
			Technologies: Assess technologies, metering & controls: heat demand, supply options & storage, modelling to optimise the system; Specifying generation, storage & distribution technologies; tech reliability, capital and O&M costs and potential suppliers.	30%	£30,000	*Estimated figures: £21k consultants x3, workshop, day attendance fee for four experts, 10 days PT*	Recommended Outline System Design: Technical system design with further options analysis overlaying other known issues including regulation, householder requirements, governance, ownership, financing, phasing and gap analysis.
			Contractual Arrangements: work on contractual models for energy supply co with householders and suppliers; plus contracts and legals with landowners/ developers and contractors/ installers	12%	£12,000	*Estimated figures: lawyers plus PT time*	Contracts prepared
			Contractual Arrangements: relating to ownership, operation of system and cost of running the service; options for JV, in-house and outsourced.	2%	£2,000		Costed options with recommendations linked to each technological/ operational system design option.
			Finance & Investment: developing financial models & scenarios for capex, revenue, grants, incentives, cost & terms of finance, ownership, O&M etc. Identifying and agreeing potential funding routes.	7%	£7,000		Finance strategy with options and scenarios developed: this will be an iterative process throughout the above steps as we build a picture.
			Update and refine risk assessment	1%	£500		Risk Register
			Business modelling & recommendations for next steps	2%	£2,000		Feasibility study report with modelling and recommendations for BCE consideration
			Phase 2	Total	**£63,900**		
Phase 3	Nov 2020 - April 2021	6 months	Planning Application goes in end 2020	0%			
			Finalise governance, business model and finance for delivery	2%	£2,000		
			Define installation project management requirements and providers	2%	£2,000		
			Clarify construction requirements, skills & experience, stages, contracts, procurement and contract management	2%	£1,500		
			Update and refine risk assessment	1%	£500		
			Update stakeholder communications plan	1%	£500		
			Depending on the governance & ownership & operational arrangements: refine BCE/set up new organisation/or temporary 'holding' organisation.	3%	£3,000		
			Raise Finance	5%	£5,000		
			Phase 3	**Total**	**£14,500**		
Phase 4	May - June 2021	3 months	Write up lessons learned reports, fact sheets, visits, wider community energy dissemination etc	5%	£4,500		
			Handover into delivery phase beyond Next Gen funding - project plan etc.	1%	£1,000		
			Phase 4	**Total**	**£5,500**		
			Total Next Gen Delivery	**Total**	**£99,900**		

7 Engagement & Communications

This project isn't about technology, it's about people. It needs to be sensitive to the needs of existing and future residents, so partnership and engagement will be at the heart of the project. People will need to be moving along together, and those most affected or worried are often those with the least power to influence things. The housing development is a contentious issue for some residents and the previous Neighbourhood Plan process fell apart. However, we have had feedback in previous village meetings that the community energy component is supported "if the housing is going to be built anyway".

There has already been a number of local consultations on the Vision and the RIBA design project and a further programme of engagement activities are planned by the Regeneration team starting in March 2020.

BCE's community engagement will be linked to the development consultation programme run by igloo, over which we have some influence but no control. If it's not being carried out in line with BCE values, then we need to be willing to walk away - we cannot be used as greenwash. We will also carry out separate local activities to find out more about people's responses to the zero carbon energy plan and protect BCE's reputation.

BCE already has relationships with most of the local stakeholders. We will be developing a detailed communications plan alongside the regeneration team during March. The table below shows the main stakeholders, their level of understanding and support of the proposed energy system, and potential activities.

Stakeholder/ Group	**Role**	**Understanding/ Support**	**Potential Activities**
Ellergreen Estate	Landowner of Hall Park extension site. Potential PV owner.	Very supportive – this is an essential part of their plans. Good level of knowledge	Ongoing discussions.
James Cropper plc	Landowner of central development site. Potential joint energy supplier.	Know carbon reduction important for the business. Not clear how much they've thought about zero carbon homes.	Direct discussions with management team and engineering. Carbon literacy training.
Anglers Inn Trust	Landowner of the Willink Field site	Generally supportive. Priority is long term benefits for the village.	Direct discussions. Carbon literacy training.
South Lakes Housing (SLH)	Owner of adjacent housing and potential development partner	Unknown – first meeting with them end Feb.	Direct discussions. Carbon literacy training.
Igloo regeneration	Development project manager	Very supportive. Little detailed knowledge of energy systems	Direct discussions. Carbon literacy training.
Development team	Decision makers on all aspects of the development	Supportive but only BCE/Quantum/Mark Cropper	Direct discussions. Carbon literacy training.

		have any detailed knowledge of implications for the project	
South Lakes District Council	Planning approval	Generally supportive of low carbon development. Not clear how far that extends into untypical housing design and large solar arrays.	Direct discussions. Potential workshop/training for planners and councillors.
Building & energy system contractors	Delivery of development and energy system	Unknown. Most contractors unlikely to have much experience of low carbon energy developments.	Toolkit talks. Potential training in partnership with Kendal College.
Hall Park residents	Mainly social housing residents – potential future BCE customers	Unknown. Some awareness among residents who have attended previous consultations and BCE meetings.	Village workshops & other local communications. Potential to access via SLH.
Other Burneside residents	Affected by any major development in the village.	Unknown. Some awareness among residents who have attended previous consultations and BCE meetings.	Village workshops & other local communications.
Residents Association	Influential among some sections of the community. Involved in new Neighbourhood Planning team.	Opposed to much of the housing development proposals.	Direct discussions. Village workshops & other local communications.
Parish Council	Influential among some sections of the community. Involved in new Neighbourhood Planning team. Will respond to planning application.	Unknown.	Presentation at meeting. Village workshops & other local communications.
Neighbourhood Planning Team	Influential with planning over scale of development and zero carbon energy aspirations.	Unknown.	Presentation at meeting. Direct discussions. Village workshops & other local communications.
BCE members	Affected by any decision to expand BCE's role and financial commitments.	Supportive of involvement in the development planning. Some but not a full understanding of the implications.	BCE newsletters & website. Discussion & presentation at meetings.

8 Risks

An initial risk register detailing some of the expected risks will be established. Risk Assessment and mitigation actions will be added to this in Phase 1. Risk Assessment and Management will be an ongoing process within the Programme Project Management.

9 Sustainable Business Model

BCE already has a sustainable business model based on its existing and potential additional PV schemes installed at James Cropper plc. This project represents a departure from that model into riskier territory. However, if successful, this new business model could be expanded in future to incorporate:

- Extending the reach of energy supply services to include existing homes and businesses in Burneside
- Extending the provision of EV charging points to other parts of the village
- Developing greater synergies in supply/demand balancing with James Cropper plc
- Capturing revenue from grid balancing services
- Developing a local knowledge hub that could offer consultancy services to other housing developers.

As covered in section 4.4 there is a need for information and demonstration projects that show how the energy system for zero carbon can be achieved, and how community energy can be a partner in this process. Burneside already attracts attention nationally and internationally for our community energy projects and we expect to be able to continue and expand that role: sharing information advice and expertise on low carbon projects.