

BRIDGEND COUNTY BOROUGH COUNCIL

REPORT TO CABINET

10 MAY 2016

REPORT OF THE CORPORATE DIRECTOR COMMUNITIES

SMART SYSTEM AND HEAT PROGRAMME

1. Purpose of Report.

- 1.1 The purpose of the report is to update Cabinet about the progress that has been made regarding the Smart System of Heat Programme (SSH) and secure Cabinet support to continue to develop the programme going forward which will require BCBC to create a Special Purpose Vehicle, commission further works to advance the project, improve governance within the programme and identify and procure suitable private sector partners.

2. Connection to Corporate Improvement Objectives/Other Corporate Priorities

- 2.1 The Bridgend County Borough Council (BCBC) Corporate Plan covers a 5 year period from 2013 – 2017 and even though the SSH Programme will run beyond this timeframe it will nonetheless address several current Corporate Improvement Objectives namely:

- Supporting a successful economy
- Making better use of resources

- 2.2 The programme has the potential to have a significant economic development impact within the County Borough, attracting substantial inward investment, creating jobs both within the initial construction period and related to the ongoing supply chain and acting as a catalyst for other energy project investment, potentially through the City Deal and other external funding.

3. Background.

- 3.1 BCBC was selected as a demonstrator for the SSH Programme in October 2014. Cabinet previously received a report (3rd February 2015) regarding the programme and to authorise BCBC participation. The SSH Programme is an ambitious, highly prestigious project, which will catapult BCBC into the role of one of the leading low carbon local authorities in the UK. The programme offers significant benefits and opportunities to BCBC such as:

- Enhanced profile;
- Income generation and financial savings potential;
- Significant investment creating job and training opportunities,
- Address fuel poverty and health inequalities among residents;
- Enhanced energy security and resilience to residents and businesses;
- Supply chain development opportunities for local businesses.
- Link to energy prospectus opportunities within the proposed Cardiff City Deal

- 3.2** The programme within Bridgend will be divided into three phases (the phases follow calendar years not financial years). Project will be developed in three stages with Phase 2 comprised of two distinct stages, namely Phase 2 Development and Phase 2 Delivery. The key constituents of all three stages are:

Phase 1 2015 - 2016

- 3.3** This phase involves using the EnergyPath Network suite of tools to create a Low Carbon Transition Plan for Bridgend County Borough.

Phase 2 Development 2016 – 2018

- 3.4** This phase will involve the development of the funding package for the project, establish the scope of the demonstrator schemes, engage with residents and commercial stakeholders and create the delivery structure for the programme.

Phase 2 Delivery 2018 – 2020 and beyond

- 3.5** Phase 2 Delivery will be the construction and monitoring phase of the programme which will test the concept and methodology of the project, and most importantly that the approach can be adopted nationally and provide an evidence base for future UK and Welsh Government (WG) policy.
- 3.6** BCBC was requested by the Department of Energy and Climate Change (DECC) to propose two projects that could be used as demonstrators for the SSH Programme to which costs could be developed to form part of the submission into the UK Government Comprehensive Spending Review which took place during the summer and autumn of 2015. The two demonstrator schemes which were proposed were the Bridgend Town Heat Network and the Upper Llynfi Valley Heat Network projects.

Bridgend Town Heat Network Project

Table 1 Scheme Summary

What	TRANSITION FROM GAS BOILERS TO HEAT NETWORKS
Focus	Accelerating domestic & commercial uptake, investment and policy
Property	Scheme total approx. 10,000 , but this would be broken into phases of development (1,000 – 2,000 per phase)
Commercial Properties	Scheme would be a mix of public and private sector buildings.
Timing	First phase would be up to 2,000 domestic properties and associated commercial buildings
Indicative Cost	£47M
ICT Integration	Potential to integrate Home Energy Management Systems (HEMS) and demand management techniques
Smart Meters	Smart heat meters could be employed
Tenure	Private housing dominant 70:30 ratio
Property	Good property mix, terrace, semi-detached, detached and low rise

Type	flats
Fabric Retrofit	Where required (Wildmill Estate).
Value Proposition	Value proposition tested private housing take up for heat networks. Business Model would be the creation of a not for profit delivery vehicle
Storage	Storage options could be included as well as cooling
Policy and Regulation	Develop guidance and policy around delivery models and resident take up.

Upper Llynfi Valley Geo-thermal Heat Network Project

Table 2 Scheme Summary

What	Utilising heat from local resources (heat from mine water, heat storage)
Focus	Utilising a local resource to provide energy security, address fuel poverty, health inequalities and create employment/training opportunities in a deprived area
Property	Domestic properties with the potential to reach up to a 1,000.
Commercial Properties	Limited commercial properties
Timing	Small scale demo (up to 300 properties) to test technology and establish scheme
Indicative Cost	£29M
ICT Integration	HEMS and Demand Management systems
Smart Meters	Smart heat meters would need to be used.
Tenure	Private housing dominant 80:20 split
Property Type	Terrace dominant (semi-detached also present).
Fabric Retrofit	Solid wall terrace properties dominant in the area. So retrofit would be required to improve performance of the property.
Value Proposition	Testing of large scale viability of geothermal heat sources and development of a credible financial investment model for export to the rest of the UK
Storage	Employ heat storage techniques.
Policy and Regulation	Improve Regulations regarding mine water abstraction, stimulate policy to use local resources to provide energy

4. Current situation / proposal.

Bridgend Town Heat Network Project

- 4.1** BCBC commissioned the engineering consultancy AECOM (through grant support from DECC – see Table 3 in paragraph 7.1 of the report) in January 2015 to undertake a detailed feasibility study of the Bridgend Town Heat Network project. The study looked at a number of potential heat sources for the scheme as well as identifying the most technical and financially advantageous areas to establish a heat network.
- 4.2** The study was completed in January 2016 and considered that the northern part of the town offered the best opportunity for the establishment of a heat network. This was due to the proximity of the proposed Llynfi Valley Biomass Power Station which

could provide the heat for the network as well as the location of key anchor buildings such as Abertawe Bro Morgannwg University Health Board (ABMU) buildings and BCBC buildings as well as the housing within the communities of Brackla, Litchard and Wildmill, where there are considered to be pockets of fuel poverty.

- 4.3** The next phase of this project is to begin discussions with both ABMU and Valleys to Coast Housing Association to secure their involvement in the scheme as well as progress talks with the Llynfi Valley Power Station developers to utilise waste heat (in the form of steam) from the site to provide an energy source for the Bridgend Town Heat Network.

Upper Llynfi Valley Heat Network Project

- 4.4** WDS Green Energy Ltd and Cardiff University were commissioned to undertake a heat mapping and master planning exercise of the Upper Llynfi Valley area in July 2015 (utilising grant support from DECC – see Table 3). The report was completed in January 2016 which concluded that the most suitable area for the deployment of a heat network was Caerau. Caerau was chosen as the most suitable area due to a number of factors such as the energy efficiency measures that have been deployed to the fabrics of the properties in Caerau through previous Arbed and ECO schemes. Although a number of heat sources were considered (gas Combined Heat and Power (CHP), biomass etc.) geo-thermal was considered the most viable for the area due to the close proximity of the housing to the former mine workings.
- 4.5** The geo-thermal source would be mine water with the proposal being that water would be pumped from the historic mine workings (average temperature 10 - 14°C) and transported through a network of pipes to resident's properties where a heat pump would be utilised to boost the temperature of the water within the radiators of the property to the required level. The mine water would not, at any point, enter the properties of the residents.
- 4.6** A bid was submitted to DECC in October 2015 for funding to complete feasibility studies and this was approved in February 2016 and so a new procurement exercise will be carried out to undertake the detailed feasibility study which will include drilling boreholes as part of a geo-technical survey of ground conditions (the geo-technical survey will identify the availability of ground water, direction of flow, water temperature, water quality etc.), a full technical and economic analysis of the scheme as well as property surveys to identify suitability for connection to the heat network. It is envisaged that this work will begin in June 2016 with carry over of grant permitted into the 2017/18 financial year.

ABMU

- 4.7** ABMU play a pivotal role in the Bridgend Town Heat Network and discussions have been opened with their Technical Services/Estates function to explain the work that has been completed and the benefits to ABMU of connecting to the heat network. Initial discussions have been positive with ABMU expressing an interest in being a partner with BCBC in the project, with the idea of a public sector owned project being of particular interest. WG have also been involved in these discussions.

4.8 In order to progress discussions it has been agreed that a further meeting be arranged between BCBC, WG and ABMU at a senior level to discuss the project and to explore the strategic benefits to both parties and the broader County Borough as well as partnership opportunities.

Governance Structures

4.9 Current governance structures within the programme exist at three levels. At the national level DECC have created a National Delivery Board which provides the senior leadership and direction to the overall national programme and which is attended by:

- DECC
- Department of Business Innovation and Skills
- Department of Communities and Local Government
- Welsh Government
- Innovate UK
- Energy Systems Catapult
- BCBC
- Newcastle City Council
- Greater Manchester Combined Authority
- Hitachi
- EDF

4.10 At a local level BCBC has created a Local Delivery Board which is intended to facilitate the project and maintain dialogue between partners and which is comprised of:

- BCBC
- WG
- Cardiff University
- Swansea University
- Valleys to Coast Housing
- Wales and West Housing Association
- Western Power Distribution
- Wales and West Utilities

4.11 Internally a project board has been set up to work in a similar way to the Local Delivery Board to promote understanding and development of the project. The board is chaired by the Corporate Director Communities and is attended by representatives from:

- Finance
- Legal
- Procurement
- Regeneration
- Planning
- Housing

4.12 However, the project has now reached a stage where a gap exists with regards to governance. There is a need for a strategic decision making group composed of

BCBC and WG representatives initially, but which senior representatives of ABMU could also join if they become a partner in the programme. This is necessary specifically with regard to determining the role of the Welsh public sector in the project moving forward.

Delivery Structures

- 4.13** Part of the SSH Programme outputs will be to test different non-traditional business models that could be deployed to deliver de-centralised energy solutions across the UK. In order to test these various business models that are being formulated by the Energy Systems Catapult (ESC), local delivery structures will need to be created within the three demonstrator authorities of BCBC, City of Newcastle and Greater Manchester Combined Authority. The delivery structures are often referred to as Energy Service Companies (ESCO's). The ESC is a UK Government funded technology and innovation centre designed to exploit commercial opportunities for new products and services created by the transformation of energy networks.
- 4.14** In order to understand the options open to BCBC for the creation of the ESCO, a workshop attended by senior officers and some Cabinet Members was held in January 2016 which was facilitated by Local Partnerships (Local Partnerships are a public sector funded consultancy who have been contracted by WG to assist local authorities within Wales to develop energy projects as part of the Wales Green Growth Programme). The workshop considered 4 broad options for the ESCO which can be summarised as:
- Public sector owned and operated
 - Public sector owned but private sector operated
 - Public sector/private sector joint venture
 - Private sector owned and led.
- 4.15** The workshop concluded that the public sector owned and led approach was too high risk an option given BCBC's limited in house skills and resource base and that the private sector wholly owned option with little or no influence from the public sector was not suitable given the nature of the SSH Programme and the desire by our partners within the programme to develop unique local solutions to the provision of heat that offer long term options that meet BCBC primary objectives.
- 4.16** The Public sector owned but private sector led approach warrants further discussion because it houses a variety of approaches that could be adopted. It is important to recognise that given that BCBC has limited skills and experience of delivering and operating a heat network project it would be advisable to engage the private sector through a design, build and operate contract or contracts to manage and reduce the risks associated with this phase of the project.
- 4.17** The important decision that BCBC will need to make is the role that it plays within the delivery of the project and the degree of control and influence that it wishes to have in order to meet its strategic objectives both in the short, medium and long terms and the best method of providing the level of control and influence that BCBC wants.
- 4.18** It is proposed that BCBC work with the ESC to develop an evidence base that can be used to develop a business case for the project using the Five Case Model

which is familiar to both UK and Welsh Governments. The Five Case Model was designed by HM Treasury for the development of a methodology around the key components of a business case namely:

- The Strategic Case
- The Economic Case
- The Commercial Case
- The Financial Case
- The Management Case

4.19 The business case can inform a future Cabinet report with recommendations for the most suitable strategic, commercial, financial, economic and management outcomes that are most suitable to meet the aims and objectives of BCBC and the SSH Programme.

Private Sector Involvement

4.20 A strong relationship with the private sector will be vital to the success of the SSH Programme in the County Borough of Bridgend in terms of both their financial resource and technical expertise. The diverse nature of the programme may mean that a strategic relationship with more than one private sector entity is necessary for the success of the programme.

4.21 Following advice from the Council's Procurement section, it is proposed that BCBC undertake a soft marketing testing exercise to ascertain the interest from the private sector in the programme which would allow us to gain an understanding of what the various private sector organisations could offer and then utilise this intelligence to inform our procurement activities to formally identify a private sector partner/s in the SSH Programme with BCBC.

Special Purpose Vehicle (SPV)

4.22 BCBC submitted a "Request for Proposal" to the Energy Technologies Institute as part of the SSH Programme bidding process. As part of the bid, BCBC was asked to consider contractual structures for the delivery of the project and these were explored during the interview stage of the bid process. At that stage BCBC proposed creating a SPV which would house a joint venture between BCBC and WG and have a contractual relationship with the body managing the programme at a national level (this would be the ESC).

4.23 The establishment of a SPV has been discussed again recently with ESC as a vehicle through which finance for the project could flow from the national level to the local level, subject to approval from the various grant awarding bodies, without exposing BCBC to undue financial risk. A SPV will provide the additional benefits both of cost transparency as well as ringfencing expenditure and intellectual property, which may help the Council if it wishes to pursue a partnership or private sector delivery option in the future. There may be accounting implications in relation to the creation of a SPV, which will need to be agreed by the Section 151 officer.

Risk

- 4.24** The SSH Programme is an extremely ambitious project, which given its scale and costs has inherent risks attached. The Council will need to consider carefully which risks it has the capability to manage versus those which other organisations are better placed to do so and/or have the necessary skillset. These risks are financial, commercial, reputational and operational in nature and BCBC needs to carefully manage its exposure to these risks through avoidance, transfer or careful management. ESC is creating a risk register for the SSH Programme at the national level and a local risk register has been produced by BCBC. It is proposed that an externally facilitated workshop for senior officers, elected Members and external partners is setup to identify and examine project risks with a view of implementing management measures of avoid, transfer or manage.

City Deal

- 4.25** BCBC is a participant in the Cardiff Capital Region City Deal which has the potential to offer significant benefits to South East Wales. Energy will play an important role in the transformation of South East Wales through City Deal and Bridgend is advantageously placed to maximise this opportunity through its involvement in the SSH Programme. One of Bridgend's unique selling points within City Deal could be its profile and position as an energy leader within Wales.

Next Steps

- 4.26** The next steps within the SSH Programme can be summarised as:
1. Setup a risk workshop to identify and evaluate all financial, commercial and operational risks to BCBC through the SSH Programme to be attended by senior officers, Cabinet Members and external partners.
 2. Continue further discussions with ABMU and where appropriate, other public sector partners regarding a partnership approach to the development of the SSH Programme within Bridgend.
 3. Undertake a soft market testing exercise to identify opportunities that private sector involvement in the programme could offer BCBC.
 4. Agree that the Council produce a tender specification and advertise via Sell2Wales for a consultant to be appointed to carryout detailed feasibility studies for the Upper Llynfi Valley Heat Network project.
- 5. Effect upon Policy Framework & Procedure Rules.**
- 5.1** The SSH Programme will create a Low Carbon Transition Plan for Bridgend County Borough which BCBC could adopt as official policy if it chooses in due course.
- 6. Equality Impact Assessment**
- 6.1** The BCBC Equalities Impact Assessment Toolkit has been utilised, which indicates that the scheme will have no impact on specific equality groups and disability duties

through Phase 1 but will require further investigation through Phase 2 Development and Delivery.

The programme is a positive step in regard to the Council's role in complying with the Future Generations and Wellbeing Act.

7. Financial Implications.

7.1 As identified in Table 1 and Table 2, the estimated capital costs of the two schemes totals £76 million. These would represent two of the largest investments BCBC has ever made and consequently the Council is considering a number of different models. To date BCBC has received funding from a variety of sources for the SSH Programme. Table 3 gives a brief summary of the funding that BCBC has received that relates directly (or indirectly in the case of the ECO Capital works grant in Caerau) to the SSH Programme.

Table 3 Funding Received to Date

Fund	Managing Body	Type of Finance	Approved Funding £	Spend to Date £	Balance of Funding £	Comments
General SSH Programme						
SSH Programme Revenue Grant	DECC	Revenue	100,000	10,000	90,000	To assist with programme delivery until March 2017
ECO Revenue Grant (Staff Costs)	WG	Revenue	38,000	38,000	0	To increase capacity within BCBC regarding energy projects
General SSH Programme Total			138,000	48,000	90,000	
Bridgend Town Heat Network						
Heat Network Delivery Unit (HNDU) Funding for Bridgend Town Heat Network Study	DECC	Revenue	27,000	27,000	0	To complete feasibility studies for Bridgend Town scheme
Smart Living Grant (Bridgend Town Scheme)	WG	Revenue	20,000	20,000	0	To cover additional costs relating to the Bridgend Town Heat Network project.
Bridgend Town Heat Network Total			47,000	47,000	0	
Upper Llynfi Valley Heat Network						

HNDU Funding for Upper Llynfi Valley Heat Network Study	DECC	Revenue	27,000	0	27,000	To complete heat mapping and master planning for the Upper Llynfi scheme
HNDU Funding for Upper Llynfi Valley Heat Network Study	DECC	Revenue	67,000	0	67,000	To complete feasibility studies for the Upper Llynfi Valley scheme
Smart Living Grant (Upper Llynfi Valley Scheme)	WG	Revenue	30,000	30,000	0	To cover costs relating to the Upper Llynfi Valley scheme.
Match Funding (Upper Llynfi Valley Scheme)	Cardiff University	Revenue	13,000	13,000	0	To cover costs relating to the Heat Mapping and Master Planning study
ECO Capital Grant (Upper Llynfi Valley Scheme)	WG	Capital	1,400,000	1,400,000	0	To make energy efficiency improvements to 159 properties in Caerau
ECO (Upper Llynfi Valley Scheme)	Scottish Power	Capital	108,000	108,000	0	Energy Efficiency improvements to 159 properties in Caerau.
Upper Llynfi Valley Heat Network Total			1,645,000	1,551,000	94,000	
Total			1,830,000	1,646,000	184,000	

- 7.2** Phase 1 of the SSH Programme is fully funded through the Energy Systems Catapult, with work currently underway to build a funding package for Phase 2.
- 7.3** The ESC are currently working on a business case into DECC to release £60M of innovation grant into the SSH Programme to be spread across the three prioritised local authorities (£20M per Authority). In addition to this £20M of innovation grant BCBC has held discussions with the Heat Network Delivery Unit within DECC to access capital grant funding from their £320M Heat Network fund.
- 7.4** BCBC has submitted an Operation Logic Table to WEFO as the first stage in the process of accessing EU Structural funds for the project. There is a potential £5M available for the project from Structural Funds and BCBC hope to be invited into the business planning stage of the process in May 2016. Discussions have also been

held with Welsh Government to access financial support through their Green Growth Wales Programme.

7.5 The funding package for the SSH Programme is being developed by ESC who are having discussions with private investors such as the European Investment Bank and the Green Investment Bank as well as European funds such as Horizon 2020.

7.6 Initial proposals from the ESC are that a holding company would be created to handle the funds at the national level and this holding company would then have a relationship with an SPV created within each of the three demonstrator authorities. There is a need therefore for BCBC to create an SPV in order to access the finance for the project (see paragraphs 4.22 and 4.23 of the report).

7.7 BCBC has allocated £250,000 to the programme from the 2016/17 to 2019/20 capital programme to assist in the implementation of the programme. Although there are opportunities for BCBC to invest in the project, it is not anticipated that the Council would contribute significantly to the financing of the programmes overall costs within Bridgend.

8. Recommendations.

8.1 It is recommended that Cabinet:

1. Undertake a soft market testing exercise to identify opportunities that private sector involvement in the programme could offer BCBC.
2. Agree to BCBC working with Energy Systems Catapult to build the business case (using the Five Case Model) to identify the preferred option for the strategic, economic, commercial, financial and management structure for the project and the role that BCBC has within that structure.
3. Approve in principle the creation of a Special Purpose Vehicle to provide a contractual structure to deliver the SSH Programme, subject to completion of the Five Case Model and suitable funding available to provide the necessary specialist legal and financial advice to create the structure. Cabinet to receive a further report in due course for their consideration in order to progress the Special Purpose Vehicle.
4. Agree that the Council produce a tender specification and advertise via Sell2Wales for a consultant to be appointed to carryout detailed feasibility studies for the Upper Llynfi Valley Heat Network project.
5. Approve the creation of a strategic level board (comprised initially of BCBC and WG) to provide senior level governance and decision making capabilities for the programme. Cabinet to receive a further report, in due course, on the details of the proposed strategic level board for their approval once draft terms have been finalised.

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Background Documents:

1. Cabinet Report 3rd February 2015
2. Bridgend Town Heat Network Feasibility Report DRAFT
3. Upper Llynfi Valley Heat Network Master Planning Study
4. BCBC Request for Proposal Smart System and Heat Programme