

BRIDGEND COUNTY BOROUGH COUNCIL

REPORT TO CABINET

19 JANUARY 2021

REPORT OF THE CORPORATE DIRECTOR COMMUNITIES

CAERAU HEAT SCHEME

1. Purpose of Report

- 1.1. The purpose of this report is to provide an update on the delivery of the Caerau Heat Scheme project, to seek authority from Cabinet to undertake an options appraisal of alternative delivery methods and for Cabinet to agree to receive a further report with a proposal on the preferred option and a way forward.

2. Connection to corporate well-being objectives/other corporate priorities

- 2.1. This report assists in the achievement of the following corporate well-being objective/objectives under the **Well-being of Future Generations (Wales) Act 2015**:-
 1. **Supporting a successful sustainable economy** – taking steps to make the county borough a great place to do business, for people to live, work, study and visit, and to ensure that our schools are focussed on raising the skills, qualifications and ambitions for all people in the county borough.
 2. **Smarter use of resources** – ensure that all resources (financial, physical, ecological, human and technological) are used as effectively and efficiently as possible and support the creation of resources throughout the community that can help to deliver the Council's well-being objectives.

3. Background

- 3.1. The Caerau Heat Scheme was established as a highly innovative project and proposed to extract heat from water contained within flooded former coal mine workings, to provide a resource for properties within Caerau. The water would be transported via a network of pipes to the properties with the temperature being boosted to the residents required level by a ground source heat pump.
- 3.2. The project is overseen internally by a Project Internal Governance Board which is comprised of officers from relevant Council departments. This reports to the Energy Programme Board. Issues are escalated from the Energy Programme Board to Communities Directorate Management Team and Corporate Management Board as required.

3.3 An external Stakeholder Group exists which provides advice and support to the Project Team. This is fed through to the Project Internal Governance Board via the Project Manager. This Group is made up of representatives from:

- Welsh Government
- BCBC
- Energy Systems Catapult
- Coal Authority
- British Geological Survey
- Natural Resources Wales
- Cardiff University
- Coalfields Regeneration Trust
- Valleys to Coast

3.4 The project has a series of decision gateways, which form critical points where research undertaken to that point is used to determine whether the proposed method of delivery can and should proceed. At each stage the technical feasibility and financial viability are considered.

3.5 Table 1 below shows these decision gateways, with their originally estimated and revised dates. It also shows project outputs and outcomes that will be available in the event of the project being closed down at any one of the decision gates.

Table 1 – Decision Gateways

	Decision Gateway	Likely date	Revised dates	Project outputs/outcomes
1	Mine water investigations do not show sufficient mine water available for the scheme to proceed.	Early 2020	Early 2021 Cost uncertainty caused delay.	Developed techno-economic model for a district heating scheme using heat pumps and mine water. Experience of consumer consultation for a domestic district heating scheme. Learning about the use of mine water as a heat source.
2	Detailed Project Development and Outline Business Case do not demonstrate that the project is viable.	Early 2020	Early 2021 Process lengthened due to testing scenarios against a base case in the techno-economic modelling and subsequent scrutiny of the	As above, and: Detailed Project Development for a district heating scheme using heat pumps and mine water.

			model by a third party.	
3	It is not possible to award a contract to a DBOM contractor (e.g. due to the tenders not being credible, or no tenders being received or negotiations with contractors being unsuccessful).	Early 2021	Mid/late 2021	As above, and: Learnings from the tendering process
4	Insufficient households sign up to the heat contract for the scheme to be viable.	2022	2022	As above, and: Learnings from the marketing of heat contracts to homes exercise.

- 3.6 Nordic Heat were appointed in November 2019 to take forward the final aspects of the work required to inform the decision gateways 1 and 2. This included mine water investigations to determine whether this is available and a viable source of heat or whether an alternative source is required and also undertaking techno-economic modelling to determine commercial viability based on the information available at the time.

4. Current Situation / Proposal

- 4.1. In the past twelve months the following key pieces of work have been completed.
- 4.2. The Coal Authority Work Package 1 and 2 Report was completed in September 2020. The report concluded that the water currently in the existing borehole is unlikely to be mine water and so further investigation would be needed. The indicative costs for the abstraction and reinjection boreholes required for the investigations that the Coal Authority suggested are required are estimated to be £1.5m and £1m respectively. The cost is approximately more than three times previous estimates.
- 4.3. Following receipt of this information, and in order to validate the Coal Authority estimate, The Coal Authority Report has been reviewed and a pre-market engagement exercise was undertaken by BCBC in November 2020. This was through a speculative notice being published on Sell2Wales. This exercise confirmed the Coal Authority's estimate to be representative of current market pricing and that drilling to 400m depth through 12 mine workings is high risk with an uncertain outcome. This has led to the conclusion that given the budget available, it will not be possible to progress with further testing and without further testing the exploration of mine water as a potential source of heat for the scheme will need to cease.

- 4.4. The Caerau Minewater Scheme Techno-Economic Model was completed in November 2020. This piece of work, completed by Nordic Heat, has shown that in order to meet the current agreed outputs, additional capital is required to construct the scheme as originally conceived. Also once operational, there will be insufficient revenue generated to cover the costs of operation, maintenance and future equipment replacement. This Techno-Economic Model was subsequently reviewed by heat network specialists ECO50.
- 4.5. Alongside the above, officers have undertaken Caerau Heat Alternative Options Market Test. The purpose of this work was to invite proposals for alternative technologies for the delivery of Caerau Heat Scheme. An evaluation of the responses has indicated that there are other potential technologies and solutions other than the use of mine water for delivering a renewable heat scheme in Caerau. These include solutions such as air-source or ground-source heat and individual property based packages.
- 4.6. As a result of the work outlined in paragraphs 4.2 – 4.5, and in line with the decision gateways for the project detailed in paragraph 3.6 it is now proposed that an options appraisal be undertaken to determine viability and suitability of alternative delivery methods.
- 4.7. It is proposed that the options appraisal be based on the following set of criteria:
- Project cost - The degree to which options are considered affordable within the overall budget currently remaining available for the project.
 - Financial viability – The degree to which options deliver revenue sufficient enough to cover operating and replacement costs in the long-term
 - Timescale – The degree to which options are considered to be deliverable within the current agreed end date of the project.
 - Compliance – The degree to which options are considered to comply with all current relevant regulations, policies and procedures
 - Funder requirements – The degree to which options are considered to be within the scope of ‘community energy’ as required by WEFO and state aid compliance.
- 4.8. The options appraisal will review the following options:
- (a) Continue with the original scope of the project, seeking funder agreement to incur higher than anticipated costs relating to borehole investigation work and work to identify further funding to increase the overall budget of the project.
 - (b) Continue with investigations into the delivery of a smaller mine water led scheme that would serve only the primary school as a demonstrator and not serve homes
 - (c) Seek an alternative source of heat for a scheme to serve homes, ceasing investigations into the use of mine water
 - (d) Deliver a blended solution of a demonstrator mine water scheme, serving the school, and a heat network with an alternative heat source serving homes

- (e) Seek to provide home energy improvements on a home by home basis with no on-going supply arrangements
 - (f) End the scheme and cease all project development work.
- 4.9. An agreed view on the options appraisal will be developed by members of the Energy Programme Board.
- 4.10. Initial discussions with WEFO have indicated that an alternative approach to delivering a community energy scheme in Caerau could be accepted, subject to submission of a satisfactory revised business plan. WEFO have confirmed that they are content for BCBC to submit a re-profile of the project that includes a potential move away from mine water as the source of a district heat network and explores other opportunities in the area, should that be the suggested way forward following the options appraisal.
- 4.11. The next steps for this project are proposed to be:
- Undertake options appraisal
 - Present findings of options appraisal to WEFO for consideration
 - Submit report to Cabinet on the outcome of the options appraisal for a decision on how to proceed and if required a subsequent report to Council.

It is currently considered that this process will take approximately up to 6 months, based on the information available at this time.

5. Effect upon Policy Framework & Procedure Rules

- 5.1. There is no direct impact on the Council's policy framework and procedure rules.

6. Equality Impact Assessment

- 6.1. An initial Equality Impact Assessment (EIA) screening has identified that there would be no negative impact on those with one or more of the protected characteristics and an EIA status of low priority is considered appropriate at this stage. It is considered that there will be no negative impacts from this report.

7. Well-being of Future Generations (Wales) Act 2015 implications

- 7.1. The Well-being of Future Generations (Wales) Act 2015 Assessment Template has been completed and a summary of the implications from the assessment relating to the five ways of working is below:

Long Term: The project will provide a key opportunity to deliver decarbonised heat system that support efforts through an innovation project to meet the UK decarbonisation targets.

Prevention: The project will provide an opportunity for those impacted in the community of Caerau to benefit from the decarbonisation transition and ensure

that solutions are designed and available for everyone and not just the ability to pay market.

Integration: The project will offer carbon reductions, reduced fuel bills and create economic opportunities through a clearly identified value chain.

Collaboration: BCBC is working with both UK Government and Welsh Government as well as private sector partners to deliver the decarbonisation agenda.

Involvement: The project involves working with a variety of stakeholders to deliver sustainable solutions around the delivery of decarbonised heat for residents. The involvement of residents in developing the scheme has and continues to be a crucial component to ensure its longer term success.

8. Financial Implications

- 8.1. The total scheme cost, as approved by the Welsh European Funding Office (WEFO), is £9,732,922, split between capital and revenue as set out in the table below. This also shows the funding sources for the scheme.

Caerau Heat Scheme	Total cost £	ERDF grant approved £	Other grants & service charges £	BCBC contribution £
Capital	7,827,791	6,293,463	366,218	1,168,110
Revenue	1,905,131	1,002,782	529,308	373,041
Total	9,732,922	7,296,245	895,526	1,541,151

- 8.2 Other external funding to the scheme includes Welsh Government grant of £301,265, DECC/Scottish Power grants of £141,605 and anticipated charges for the supply of heat - £452,656. The £1,168,110 BCBC capital contribution relates to expenditure already incurred and funded and retrospectively agreed by WEFO as part of the scheme. WEFO reimbursed these costs and, as a result, the Council was able to put aside this funding to contribute towards the future capital costs of the scheme.

- 8.3 The expenditure to date of the scheme is £2,196,370 as set out in the table below.

Scheme costs	Total cost £	Spend to 30 November 2020 £
Capital costs:		
Estates – preliminaries & construction	6,293,462	-
Professional services	1,534,329	1,534,329
TOTAL Capital costs	7,827,791	1,534,329
Revenue costs:		

Professional services	654,075	249,932
Accommodation	304,754	-
Staff – BCBC match	354,563	272,048
Staff – grant funded	361,352	86,295
Administration	123,000	15
Overheads (at flat rate)	107,387	53,752
TOTAL Revenue costs	1,905,131	662,041
TOTAL SCHEME COSTS	9,732,922	2,196,370

Funding to date is shown below:

Cost:	ERDF Capital grant £	ERDF Revenue grant £	Other grants £	BCBC revenue match (salaries) £	TOTAL £
Capital	1,233,584		300,745		1,534,329
Revenue		339,230	50,580	272,231	662,041
TOTAL	1,233,584	339,230	351,325	272,231	2,196,370

8.4 In addition to the costs incurred to date, the project currently has a number of live contracts, the remaining costs of those contracts being c. £648,089. These are:

- Detailed Project Design (Nordic Heat) £325,964
- Legal Advisor (Pinsent Mason) £34,390
- Private Wire Study (Challoch Energy) £13,652
- Strategic Advisor (Adwill Assoc.) £44,240
- Comfort as a Service (Energy Systems Catapult) £229,843

8.5 Taking into account these contractual commitments, the remaining budget for the scheme is £6,888,465.

8.6 Depending on the outcome of the options appraisal, BCBC may need to review the existing Terms and Conditions of these contracts and consider whether any variation is required, but cannot do so until a decision is made on the delivery option for the Scheme.

8.7 Options for delivering the scheme will only be considered viable if they meet the key requirement of being deliverable within the current remaining project budget and with sufficient revenue generated to cover long term running costs.

8.8 Discussions have taken place with WEFO and spend to date is considered to be within the scope of the approved project and therefore likelihood of funding clawback is limited. This however will need to be confirmed with WEFO once the options appraisal has been completed and implications are known.

9. Recommendations

9.1. It is recommend that Cabinet:-

- Notes the action taken by officers in relation to the delivery of the project since the last report to Cabinet.
- Approves that an options appraisal of alternative delivery models as detailed in sections 4.7 and 4.8 be undertaken.
- Delegates authority to the Corporate Director Communities to agree the final terms of the options appraisal in consultation with the Energy Programme Board.
- Notes that a further report shall be received once the options appraisal has been completed with a proposal on the preferred option and a way forward and, should it be required, recommend to Council an update to the Capital programme.

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19 January 2021

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Background documents:

- Coal Authority WP1&2 Report
- Caerau District Heating Scheme – Report of Techno-Economic Evaluation
- Caerau Heat Alternative Options Market Test