



**RHONDDA CYNON TAF COUNTY BOROUGH COUNCIL**

**CLIMATE CHANGE CABINET SUB-COMMITTEE**

**23<sup>rd</sup> MARCH 2023**

**HYDRO ELECTRIC GENERATION IN RCT**

**REPORT OF THE DIRECTOR OF CORPORATE ESTATES IN DISCUSSION  
WITH THE CABINET MEMBER FOR CLIMATE CHANGE & CORPORATE  
SERVICES**

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**1. PURPOSE OF THE REPORT**

- 1.1. The purpose of the report is to provide an overview of an updated viability report, completed by a specialist company, for the development of small-scale hydroelectric power schemes within the boundaries of the County Borough of Rhondda Cynon Taff. The historical, wide-ranging, report has recently been the subject of an internal review.

**2. RECOMMENDATIONS**

It is recommended that Members:

- 2.1. Note the contents of this report as part of the works agenda of the Climate Change Cabinet Sub-Committee.
- 2.2. Agree further expenditure in the development of the proposals, as detailed in sections 6 and 11, to undertake further survey works and feasibility studies, to assess full potential and develop further project proposals.
- 2.3. Receive further periodic updates on the progress of the proposals, either collectively, or on a 'case by case' basis.

### **3. REASONS FOR RECOMMENDATIONS**

- 3.1 To advance proposals for the development of potential small-scale hydroelectric schemes across 30 selected sites in Rhondda Cynon Taff, as instigated at a previous CCC Steering Group meeting.
- 3.2 Agreeing to advance with a selection of the most beneficial schemes and progress to the next stage, involving more 'in-depth' feasibility studies.
- 3.3 The schemes, if deemed viable, will have the potential to make a positive contribution towards the Council's efforts to increase its renewable energy generation and in contribution towards achieving our carbon reduction targets.

### **4. BACKGROUND**

- 4.1 In RCT's Corporate Plan 2020-24, 'Making A Difference', the Council acknowledged that delivering on our Climate Change commitment is our greatest challenge. In our plan we committed to delivering priorities, all of which will contribute to and benefit from tackling climate change.
- 4.2 Officers have previously reported on the ongoing work to investigate the potential for the development of renewable energy utilising hydroelectric power. These are projects which would be developed by the Council and as such would both contribute to the increase in the renewable energy provision and carbon reduction in the area, thus contributing positively to the Climate Change Agenda.
- 4.3 To achieve the target of net zero, the Council must invest in the development of clean energy generation projects that enable the Council to decarbonize its assets across the estate. In the development of carbon neutral building energy models, solutions may be duplicated across the estate, to form part of the Net Zero strategy. With grid constraints becoming an issue across the region, the generation of renewable energy such as hydro will assist, introducing potential innovation opportunities across the County Borough.
- 4.4 The reliable availability of water and the 24 hour a day generation of a hydroelectric generator means that the energy output, and therefore financial return of a hydroelectric system, can prove higher than other technologies. However, it should be noted that such schemes present a significant challenge in development, and this is the first step on that journey.
- 4.5 In 2012, the Council engaged with TGV Hydro, a specialist company recommended by the Welsh Government Energy Service (WGES), to identify and assess potential sites across Rhondda Cynon Taf for the development of small-scale hydroelectric power schemes. In total, the feasibility study assessed 67 potential locations, proposing 30 of these sites be taken forward for further consideration and assessment. However, an executive decision was taken not to proceed any further, at that time.

## **5. CURRENT SITUATION**

- 5.1 The above mentioned historical study consisted of an overview and viability report which was an initial appraisal of the hydropower potential at each of the 30 recommended sites. The report consists of an estimate of the probable flow and head for the potential schemes, the likely energy generation capacity, and an estimate of construction costs based on experience of similar sites.
- 5.2 The 30 potentially viable hydroelectric scheme sites are put forward in the updated report, accompanied by site description, power analysis and high level indicative costs. Each of these 30 schemes had been previously recommended for further detailed study, in which more accurate data can be gathered, on site, and from other necessary data sources (e.g. NRW).
- 5.3 Officers have updated the format of the original report (*as included in Appendix 'A'*) and the updated report outlines a first indication of each site's potential viability, albeit as part of a desktop survey, using historic data only.
- 5.4 Officers are in the process of engaging with specialist companies and the Welsh Government Energy Service (WGES) to further assess sites that are considered 'best placed' to take forward to the next stage.
- 5.5 The assessment criteria for selection of suitable sites are varied, including consideration of adjacent land ownership issues, etc., plus the essential ability to match potential generating capacity, with local private wire opportunities, that can feed into compatible Council owned buildings or sites.

## **6. LOOKING FORWARD**

- 6.1 The internal, updated viability report (*Appendix 'A'*) outlines first indications of each site's potential, however, the next step is to select the sites considered to look most beneficial and then to take these proposals forward for further full feasibility studies. This would include a site visit and further research into factors which may affect the ecological impact, geology, construction methodology and costs which are not apparent from the initial desk-based viability report.
- 6.2 Further investigation and appraisal will be needed to determine the best option for use of the energy generated, including an assessment into the viability of possible private wire arrangements within the vicinity of the proposed sites. Alternatively, an export arrangement to the National Grid, or a combination of both, will also be considered. The potential for private wire agreements, to help in decarbonising the Council's estate, will be a major consideration when selecting which schemes to take forward to the next stage for further feasibility studies.
- 6.3 At this stage, Officers have been successful in identifying three sites that this report can recommend taking forward into a full feasibility study. From the information currently available, these are sites considered to offer the best investment opportunities and potential carbon savings to the estate, however a full technical evaluation will need to be determined, as part of this further assessment process. The selected sites are located at Rhydyfelin, Cwm Parc and Nant Cae-dudwg, and have the potential to decarbonise several buildings within the estate, including several schools and a theatre (*refer to Appendix 'B' for further information*).

- 6.4 With regard to the remaining 27 sites, further work will be required to confirm and update the original conclusions put forward in the previous viability report, which will be reassessed in the context of the revised criteria referred to above. It is proposed that the Council engage the services of a specialist company to further assess the updated internal report, for all remaining sites, and then advise on the 'most beneficial' schemes, to take forward for more detailed feasibility and outline design studies.
- 6.5 Upon completion the Council would then retain an essential 'priority list' of potential hydro-electricity projects, across the County Borough. Information on associated 'viable' opportunities having the potential to help decarbonise the RCT Estate, would also be included in the wider study.
- 6.6 Following completion of 6.4 & 6.5 above, it is proposed that the next step would be to select a small percentage of sites to be taken to the next feasibility stage, however this decision will largely depend on the findings of the wider study, when known, and will be the subject of a later update report.

7. **EQUALITY AND DIVERSITY IMPLICATIONS / SOCIO-ECONOMIC DUTY**

This supporting report is for the purpose of update and consequently an Equality Impact Assessment is not required in regard to this report.

8. **WELSH LANGUAGE IMPLICATIONS**

This supporting report is for the purpose of update and consequently a Welsh Language Impact Assessment is not required with regard to this report, however a copy can be made available in Welsh if requested.

9. **CLIMATE CHANGE IMPLICATIONS**

This supporting report is for the purpose of update only, however if the potential as described herein is realised, the outcomes will make a positive contribution towards tackling climate change, in helping to decarbonise the Council's Estate.

10. **CONSULTATION**

There are no consultation requirements at present with regards to this supporting report. However, should any proposals proceed forward, appropriate consultations will take place as part of the necessary planning approval process, at the appropriate time.

11. **FINANCIAL IMPLICATION(S)**

- 11.1. It is estimated that the cost of taking the three selected sites, to the next stage of assessment (*as referred to in item 6.3 above*), will be in the region of £15,000, and this can be funded from existing budgets, under the dedicated cost centre set aside for the development of Carbon Reduction Projects.
- 11.2. A wider feasibility study (*as referred to in item 6.4 above*), covering the 27 remaining sites, it is estimated will cost in the region of £25,000, and it is anticipated that this can also be funded from within existing budgets.

**12. LEGAL IMPLICATIONS**

Natural Resources Wales (NRW) regulates many aspects of environmental protection and is particularly involved in the protection of inland waters, however contact will only be made to obtaining further data, at this stage of the process.

**13. LINKS TO THE CORPORATE AND NATIONAL PRIORITIES AND THE WELL-BEING OF FUTURE GENERATIONS ACT.**

All actions that may arise resulting from the recommendations of the Climate Change Cabinet Steering Group report, will take full regard to the seven National Wellbeing Goals.

**14. CONCLUSION**

This report provides an overview of potential small-scale hydropower schemes across Rhondda Cynon Taff. It is recommended that the Climate Change Cabinet Sub-Committee approve the necessary funding to enable the Council to appoint industry specialists, to assist Officers in moving forward with additional investigations required to develop proposals towards future viable projects.

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**Appendix A**

Hydro Electric Viability Overview Report.

**Appendix B**

Summary of Suggested Micro Hydro Electric Schemes to Take Forward for Feasibility Studies

*Both to follow on the next page.*