



RHONDDA CYNON TAF COUNTY BOROUGH COUNCIL

CLIMATE CHANGE CABINET STEERING GROUP UPDATE REPORT

30th SEPTEMBER 2020

CORPORATE ESTATES UPDATE REPORT ON ENERGY GENERATION AND RELATED ISSUES

**REPORT OF THE DIRECTOR OF CORPORATE ESTATES IN DISCUSSION
WITH THE CABINET'S CLIMATE CHANGE CHAMPION (COUNCILLOR
RHYS LEWIS)**

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1. PURPOSE OF THE REPORT

- 1.1 The purpose of the report is to provide an update relating to the position of the work of the Climate Change Cabinet Steering Group up to 30/09/20. Following the suspension of various Council meetings as a result of the Flooding and Coronavirus situations, the Climate Change Cabinet Steering Group has not met since January 2020 and this update report provides details of the current situation with regards to the work underway on the development of renewable energy projects and certain other related issues.

2. RECOMMENDATIONS

It is recommended that Members;

- 2.1 Note the contents of this update report as part of the ongoing work of the Climate Change Cabinet Steering Group.
- 2.2 Agree to continue with ongoing discussions with third parties with a view to maximising the energy generation subject to the final Welsh Government carbon footprint calculator.
- 2.3 Receive a further report in early 2021 providing a further update on progress.

3. REASONS FOR RECOMMENDATIONS

- 3.1 The contents of this report provides background information and update on the current situation with regards to the issues covered by the Climate Change Cabinet Steering Group. It provides an update on the proposals for the Council to build and finance potential solar and wind schemes on Council or other public sector owned land that will make a significant contribution to the Council achieving its Carbon Neutral target. It also provides an update on some other areas which have relevance for the development of the renewable energy projects.

4. CURRENT ENERGY GENERATION STRATEGIES

- 4.1 Rhondda Cynon Taf Council has a long-established programme of investing in Energy Generation measures and this has included the installation of renewable Energy technology with over 100 Solar panel arrays being installed across both Schools and Corporate Buildings totalling 1.58 MW.
- 4.2. In addition to the investment in Solar energy above there has also been progress on other initiatives;
- The Taffs Well Thermal Spring Project is currently underway and when completed will make use of renewable geo-thermal/underground energy using water from the River Taff.
 - Support was previously provided for the development of a community micro-hydro scheme at Clydach.
- 4.3 The Carbon Reduction Programme (formerly known as the Invest to Save Programme) for Financial Year 2020/21 has been approved to invest around £1.2m on energy and carbon reduction improvements, subject to resources being available. Furthermore, a list of other potential energy efficiency projects with longer viability periods has also been developed for further consideration and possible additional investment.

5. CURRENT RENEWABLE ENERGY PROJECTS SITUATION

- 5.1 The Corporate Estates Energy team has recently been investigating the potential of using RCT-owned land for the development of major renewable Energy projects for both Wind and Solar generation, with the assistance of the Welsh Government Energy Service. These are projects which would be primarily developed by Rhondda Cynon Taf Council and as such would both contribute to the increase in the renewable energy provision and carbon reduction in the area and also make a positive economic contribution to the financial situation of the County Borough which could then be invested in further related improvements or other services for the benefit of citizens.

- 5.2 As the first stage of this process a number of sites across RCT were appraised with regards to the various aspects of their viability. As a result of this process a number of sites were not taken forward to the next stage which involved a more in depth appraisal and detailed discussions with the electricity network provider Western Power Distribution and other interested third parties.
- 5.3 The projects which proceeded to the next stage of the process of evaluating the technical, financial and carbon reduction viability were;
- Project 1 - A 9 MW wind farm installation
 - Project 2 - A 9 MW wind farm installation
 - Project 3 - A 3 MW wind farm installation
 - Project 4 - A 6 MW solar farm installation

For these four projects various information has been obtained from Western Power Distribution (WPD) and further site analysis conducted. Each of them has been considered on both an RCT-only basis and also on a potential collaboration basis with third party organisations.

- 5.4 For the Wind farm installations referred to in projects 1 & 2, discussions have also been held with National Resources Wales (NRW) with regards to the possibility of a joint development of larger wind farms and preferably with RCT Council taking the lead role via an arrangement to lease the relevant land from NRW to develop larger facilities. Prior to the last few months these discussions had not developed strongly but recent changes in NRW have led to more positive discussions about the viability of a direct relationship with RCT Council rather than the lesser option of access over NRW land (and therefore developing Wind turbines on current RCT land only). These outline discussions with NRW are expected to progress to an 'agreement in principle' on the nature of the future relationship during the coming period with a clear picture of the technical and financial options for these two Wind farm sites.

There are several different scenarios for Projects 1 and 2 of the Wind farm projects both for RCT development only and for a combined RCT & NRW land development. If we are successful with NRW negotiations, the projects could increase from 9 MW to 16.45 and 15 MW projects respectively. However, these would require significantly more investment but would almost double the energy generation which could significantly offset our carbon footprint for energy consumption across our built asset portfolio.

Outline details of the various options for Projects 1 and 2 including the estimated development cost options, carbon benefits and related

financial payback periods are given in Appendix 1. For example the largest RCT and NRW land combined option for both sites is for 31MW of Wind Power with 12 wind turbines (7 at Project 1 site and 5 at Project 2 site) and this option would also generate an estimated Carbon Benefit of 25,739 Carbon Tonnes per annum.

- 5.5 For the Wind farm Project 3 (currently based on a single 3 MW wind turbine) this was not initially progressed to the same level of investigative detail as the other two Wind Farm sites due to the Grid connection issues and the lesser scale of generation potential. However, further discussions have progressed with a third party which owns the adjacent private wind farm. These had focused primarily on building a single RCT Turbine next to the adjacent site but the third party have recently suggested some other options regarding potential partnerships on the site (including RCT investment) and these discussions are ongoing to fully understand the implications and viability.

Outline details of the estimated development cost options and related financial payback periods are also given in Appendix 1. For illustrative purposes the development of a single 3MW RCT turbine on the land adjacent to the third party site would also generate an estimated Carbon Benefit of 2,323 Carbon Tonnes per annum.

- 5.6 For the Project 4 Solar Farm project there were substantial discussions with a potential third party partner whereby they would be supplied directly by a Private Wire arrangement. When these discussions were ceased by the potential third party it was then agreed that work on the Solar Farm option would proceed on an RCT only basis. This is continuing and a formal Grid connection application has recently been made to Western Power for a 5MW connection.

Outline details of the estimated development cost options and related financial payback periods are given in Appendix 1. For illustrative purposes the development of a 6 MW Solar Farm (with a 5 MW grid connection) on the Project 4 site would generate an estimated Carbon Benefit of 1,706 Carbon Tonnes per annum.

- 5.7 As part of the ongoing preparations, Ecology study work has already been commissioned for the projects and has commenced for the Project 4 Solar Farm site and is being extended to Project sites 1 and 2. This work can also be extended to the Project 3 site if the discussions with the third party progress satisfactorily.

- 5.8 A budget of £80K is available from existing resources to fund various investigations and necessary work to enable a report to be drafted with further details. This report will include data regarding the optimum size of the installations, the energy outputs, the carbon reductions and financial information for capital expenditure, capital funding and revenue income generated.

6. POTENTIAL EXPANSION OF RENEWABLE ENERGY AMBITIONS

- 6.1 Further work is also scheduled to look at those sites previously identified on the first stage list of RCT sites for Wind or Solar renewable generation but which were not progressed at that time to the next stage of the analysis. The work will include whether the sites could be made viable by the addition of other land on a purchase, lease or partnership basis and will be informed by the current liaison process with Western Power and the ARUP report on the electricity network in Rhondda Cynon Taf which is expected to be received in early October. This work was scoped just prior to the Flooding and Coronavirus situations and as such has been delayed but is due recommence shortly.
- 6.2 The feasibility of installing Solar generating car ports at RCT sites has also been examined with the specific possibility of a first installation trial at a Leisure Centre subject to the outcome of a feasibility study. A case study has been scoped and the larger of the two options has an estimated cost of circa. £528K based on a payback period of 16.8 years and could generate 241,158kWh of renewable Solar Energy with a dedicated 'Private Wire' connection to the Leisure Centre. A feasibility study for this project has recently been prepared for final consideration.
- 6.3 The potential of Battery storage and usage options will also be considered as part of the wider examination of technologies. We are specifically looking at the potential inclusion of battery storage as part of several larger roof top solar projects such as Rhondda Sports Centre and Ty Elai as part of the Carbon Reduction Programme referred to in paragraph 4.3 above. However the progression will be partially dependent on the costs at the design stage.
- 6.4 The potential of Hydrogen for fuel cells and vehicles is also being considered. Several meetings have taken place with Welsh Government about potential Hydrogen networks but costs are prohibitively high at this stage.

- 6.5 The Taffs Well Thermal Spring project is well underway and both Planning permission and Natural Resources Wales approval have recently been received. Tenders have also been received and whilst the project costs were higher than originally estimated a process of design refinement has been undertaken which has reduced the cost. The current anticipated project cost is £326k. Completion is scheduled to be by March 2021 to coincide with the original end date of the Renewable Heat Incentive scheme (it has recently been extended for projects commenced by December 2020 but we are still awaiting full details of the revised conditions).
- 6.6 The potential of the various water resources within RCT is also currently being investigated and discussions regarding the future potential using Minewater have been held with Bridgend Council who have a large project already underway (which is largely externally financed). Other water/hydro projects which were previously regarded as not being viable many years ago could also be re-examined but this would probably require an external resource to undertake the work.

7. RENEWABLE ENERGY PROJECTS SITUATION AT AMGEN CYMRU

- 7.1 Amgen Cymru is a private limited company wholly owned by RCT Council. The Company delivers waste transport, treatment, recycling and disposal services to the Council and other customers within South East Wales. To date their main involvement in renewable energy production has come from the generation of electricity from Landfill Gas. This is a Biogas rich in Methane which is produced as a result of the breakdown of biodegradable waste within a landfill. This is considered to be a form of renewable energy and has historically qualified for the Renewable Obligation subsidy.
- 7.2 The power generation scheme at Bryn Pica has operated since 2003 and has continued to contribute towards the replacement of regional electrical demand from fossil fuel sources. At its peak, the scheme exported 1.9 MW/hr of electrical energy, however the diversion of biodegradable waste from landfill in accordance with EU and regional government policy has resulted in a diminishing resource going forward. Current export rates are around 0.8 MW/hr and this is predicted to drop to 0.6 MW/hr by 2027.
- 7.3 Estimates indicate that 1.2 – 1.4 MWs of redundant export capacity exists at Bryn Pica. In terms of potential future renewable schemes, this is an asset which the Company is keen to utilise and is currently working through technical and contractual complexities in this respect. This could

facilitate reasonably rapid deployment of solar, wind or other generating technology commercially viable at that scale.

- 7.4 The Company also has a much smaller landfill generating station at the Nant-y-Gwyddon Landfill Site (closed in 2001). This is currently producing around 0.05 MW/hr. Previously power generation at the site peaked at 0.65 MW/hr and as such there is redundant export capacity at the site. Recent work done on the local electricity network has indicated that an export connection of 0.8 MWs could be provided at the site, with relatively minor expenditure. Amgen have been mindful of this benefit and has investigated the deployment of both wind and solar generation at the site.
- 7.5 Discussions with 'Infinite Renewables' regarding the development and operation of a single wind turbine have progressed through Aug-20. Amgen Officers have meet with the developers to review civil engineering works required at the site in order to facilitate the construction work. RCT Corporate Estates are in the process of reviewing the land title and Amgen lease with a view to offering a 20 year operating lease to the wind developer. Consideration has been given to the best form of such an agreement and it is proposed that RCTCBC will contract / lease directly with the wind developer and receive rental payments directly.
- 7.6 The Bryn Pica Facility is also home to the Tomorrows Valley Food Waste Treatment Plant, owned and operated by a private contractor, BioGen (Bryn Pica) Ltd. This facility operates using the Anaerobic Digestion technology and recycles separately collected food waste from RCT, Merthyr and Newport council. The AD Plant at Bryn Pica generates and exports electrical electricity with a capacity of circa 1 MW/hr. In addition, the plant produces large volumes of waste heat a significant proportion of which is not currently being utilised for any beneficial purpose.
- 7.7 In accordance with central government and regional government policy, Amgen has outlined a scheme for the potential utilisation of waste heat generated at the Bryn Pica facility. The potential carbon offsetting benefits of community and commercial / industrial heat networks has been clearly documented and can form part of the solution to reducing carbon emission. However, the technical and economic challenges of connecting heat producers to consumers has resulted in significant underdevelopment of heat networks within Wales and the UK in general. Working with the Council and Welsh Government Amgen are facilitating the development of an Eco Park on an area of undeveloped land at Bryn Pica.

7.8 At the point of development this small industrial park will target commercial tenants operating within the sustainability sector (waste, recycling and energy sustainability), particularly those that can gain benefits from the use of waste heat and renewable electrical energy. The scheme has generated much interest to date and has been supported through outline development and site preparation by Welsh Government funding. Detailed design is currently ongoing and the project team is considering funding options for full build out costs.

8. OTHER ISSUES AND DEVELOPMENTS RELEVANT TO THE CURRENT RENEWABLE ENERGY SITUATION

8.1 Western Power Distribution Update

RCT Council has had regular contact with Western Power Distribution (WPD) over many years but this contact has extended since the exercise to look at potential Renewable Energy project began in 2018. More recently, in April 2020 we were contacted directly by WPD via the Chief Executive explaining how WPD wishes to *'engage with all the Local Authorities within Wales in respect of energy planning to achieve the Government's target of Net Zero carbon emissions by 2050'*. This is related to the changing role of WPD in the next few years from a DNO Distribution Network Operator to a DSO Distribution Systems Operator. This will have substantial implications for their role in the overall electricity marketplace and as part of this they will have a more proactive role in managing local generation up into the network as well as their traditional role of managing large scale generation down through the network to users.

As part of the process RCT has provided a considerable amount of information to WPD. The discussions with WPD have been very positive and there are firm plans for an ongoing dialogue process to provide mutual information and assistance. The first of these follow up meetings took place in July and also included a slot for ARUP. As part of this meeting WPD confirmed their commitment to ongoing dialogue and to provide ARUP with certain information that they would need to compile their report on the Energy network in the RCT Council area. (see 8.2 below). It was also agreed that the next meeting between RCT and WPD will take place once the ARUP report on the RCT Energy network has been finalised and received.

8.2 ARUP Update

Following consideration of the ongoing Energy network information requirements and the existing RCT resource, ARUP consultancy have

been appointed to carry out a specific study of the Energy network in RCT, including its constraints, topography and opportunities. ARUP recently carried out a similar Wales-wide study for Welsh Government but it lacked specific information for RCT. This RCT specific study will follow similar principles but with an RCT level of granularity. The process is ongoing (including the joint meeting with WPD, and the information provided by, WPD to ARUP as referenced above in paragraph 8.1) and the report is expected in early October. This relationship should also offer RCT the facility to use this specialist additional resource as necessary such as to assist with a new review of Water/Hydro opportunities within RCT.

8.3 Welsh Government Energy issues update

As part of the wider RCT Renewable Energy and Carbon neutral strategy there is an ongoing and useful relationship with the various aspects of the Welsh Government Energy Service (WGES). They have provided significant assistance at various stages of the Renewable Projects and RCT has also recently completed an application for further WGES assistance with a project to examine and identify the potential and costs of RCT moving to an Electric Vehicle Fleet option (known as ULEV).

The other current Welsh Government issue is the ongoing lack of final clarity on the Carbon Footprint calculator guidance and what criteria will be applied to which activities public sector bodies in Wales will be able to claim as being 'Carbon beneficial'. The position is still being finalised by Welsh Government but the initial indication at this stage was that we may only be able to 'claim' Renewable Energy that is directly used. This stance would have significant implications and formal representations about our concerns have already been made to Welsh Government (as have some other Local Authorities).

8.4 Cardiff Capital Region Energy Strategy

As part of the ongoing work of the Cardiff Capital Region City Deal team they have recently produced a Regional Energy Strategy. The overall objective of this strategy is to outline and develop a strategic pathway identifying key interventions to deliver on the Capital Region's ambitions for decarbonising its Energy systems in order to meet Welsh Government targets, and to be on track for Net Zero by 2050.

The content of the report was outlined by the City Deal team on a 30th September meeting call to largely Energy-related staff across the City Region. With the support of the Welsh Government Energy Service they will be instituting a programme of briefings and information to the

10 Local Authorities before formally presenting the Strategy to the Cardiff City Region Cabinet meeting in December 2020.

9. EQUALITY AND DIVERSITY IMPLICATIONS

9.1 An Equality Impact Assessment is not required with regard to this report.

10. CONSULTATION

10.1 There are no consultation requirements at present with regards to this supporting report.

11. FINANCIAL IMPLICATION(S)

11.1 All existing 'live' projects are funded through relevant cost centres and an existing enabling budget so there are no further financial implications aligned to this interim report.

12. LEGAL IMPLICATIONS

12.1 There are no legal implications aligned to this report

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

13.1 The purpose of the report is to provide an update relating to the work of the Climate Change Cabinet Steering Group with regards to the work underway on the development of renewable energy projects and certain other related issues.
The future actions that arise as a result of the future recommendations of the Climate Change Cabinet Steering Group report will be considered by the Council's Cabinet and it will take full regard to the seven national wellbeing goals.

14. CONCLUSION

14.1 This update report provides information relating to the work of the Climate Change Cabinet Steering Group meeting with regards to the work underway on the development of renewable energy projects and certain other related issues.

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Appendix 1 – Potential Energy Generation Projects

Appendix 1 – Energy Generation, Carbon Savings and Indicative Financial Information

Project		Annual Energy Generation (MW Hours)	Annual Carbon Reduction (Tonnes)	Total Capital Investment (£M)	Total Revenue Costs (£M)	Total Income from Energy Generation (£M)	Net Revenue Position (-Surplus/ +Deficit) (£M)
1a	9MW Wind farm RCT only	21,374	6,515	15.406	29.804	(29.011)	0.793
1b	16MW Wind farm RCT & NRW	47,717	14,545	25.094	53.535	(64.766)	(11.231)
2a	9MW Wind farm RCT Only	22,033	6,716	14.207	28.200	(29.906)	(1.706)
2b	15MW Wind farm RCT & NRW	36,722	11,194	21.808	45.816	(49.843)	(4.027)
3	3MW Wind farm RCT Only	7,620	2,323	3.161	7.154	(9.685)	(2.531)
4	6MW Solar farm RCT Only	5,598	1,706	4.811	13.099	(15.771)	(2.672)

Summary of RCT & NRW Projects

	31MW Wind farms RCT & NRW	84,439	25,739	46.902	99.351	(114.609)	(15.258)
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Notes and Assumption

- 1) Wind projects are evaluated over 20 years and solar projects over 35 years;
- 2) Total Capital Investment includes construction costs, grid connections, fees, contingency/risk and project management;
- 3) It is assumed that the Capital Investment will be funded (subject to approval) by prudential borrowing;
- 4) Total Revenue Costs include operating and maintenance costs, insurance, metering and electricity, business rates, systems costs and borrowing repayments;
- 5) Total Revenue Costs and Total Income from Energy Generation are whole life costs over the economic project lives, subject to inflation and show real prices (in cash terms) not adjusted to show net present values.