CYNGOR BWRDEISTREF SIROL

RHONDDA CYNON TAF

COUNTY BOROUGH COUNCIL

COMMITTEE SUMMONS

C Hanagan
Service Director of Democratic Services & Communication
Rhondda Cynon Taf County Borough Council
The Pavilions
Cambrian Park
Clydach Vale, CF40 2XX

Meeting Contact: Hannah Williams - Council Business Unit (07385401954)

YOU ARE SUMMONED to a virtual meeting of **CLIMATE CHANGE CABINET SUB COMMITTEE** to be held on **THURSDAY, 23RD MARCH, 2023** at **1.00 PM.**

Non Committee Members and Members of the public may request the facility to address the Committee at their meetings on the business listed although facilitation of this request is at the discretion of the Chair. It is kindly asked that such notification is made to Democratic Services by Tuesday, 21 March 2023 on the contact details listed above, including stipulating whether the address will be in Welsh or English.

AGENDA **Page No's**

1. DECLARATION OF INTEREST

To receive disclosures of personal interest from Members in accordance with the Code of Conduct.

Note:

1. Members are requested to identify the item number and subject matter that their interest relates to and signify the nature of the personal interest; and
2. Where Members withdraw from a meeting as a consequence of the disclosure of a prejudicial interest they **must** notify the Chairman when they leave.

2. MINUTES

To approve as an accurate record, the minutes of the meeting of the Climate Change Cabinet Sub-Committee held on 6th December 2022.

5 - 10

3. RCT CLIMATE CHANGE ENGAGEMENT PLAN (2023-2025)

To receive the report of the Service Director of Democratic Services and Communication, which outlines proposals to communicate and involve stakeholders in developing the Council's approach to working together to achieve its target of becoming a carbon neutral organisation by 2030.

11 - 36

4. CORPORATE DECARBONISATION STRATEGY AND ACTION PLAN

To receive the report of the Director of Corporate Estates, which enables Members to consider, review and approve the adoption of the draft Corporate 'Decarbonisation Strategy' and embedded 'Action Plan', the aim of which is to provide a clear pathway, with defined timescales, to assist the Council in delivering upon its target of achieving Carbon Neutral status by 2030.

37 - 104

5. HYDRO ELECTRIC GENERATION IN RCT

To receive the report of the Director of Corporate Estates, which provides 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.

105 - 132

6. PROPOSED SOLAR FARM

To receive the report of the Director of Corporate Estates, which provides a further update to Members with regards to the work underway in the development of a 'Land Based Solar Farm', to be located on Council owned land located at Coed Ely, on an 84-acre 'terraced' former colliery site, near Tonyrefail. The facility will, when constructed, be an asset owned by Rhondda Cynon Taf County Borough Council.

133 - 138

7. URGENT BUSINESS

To consider any items which the Chair by reason of special circumstances is of the opinion should be considered at the meeting as a matter of urgency.

Service Director of Democratic Services & Communication

Circulation:-

The Chair and Vice-Chair:
(County Borough Councillor C Leyshon and County Borough Councillor A Crimmings respectively)

County Borough Councillors:
Councillor R Lewis, Councillor M Norris and Councillor J Barton

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RHONDDA CYNON TAF COUNCIL CLIMATE CHANGE CABINET SUB COMMITTEE
Minutes of the virtual meeting of the Climate Change Cabinet Sub Committee meeting held on Tuesday, 6 December 2022 at 3.00 pm.

County Borough Councillors - Climate Change Cabinet Sub Committee Members in attendance:-

Councillor A Crimmings Councillor R Lewis
Councillor M Norris

Officers in attendance

Mr P Mee, Chief Executive
Mr S Gale, Director of Prosperity & Development
Mr D Powell, Director of Corporate Estates
Ms L Lawson, Performance Manager
Ms E Dean, Environment Planner
Mr R Wistow, Ecologist
Mr J Arroyo, Energy & Carbon Reduction Manager
Mr P Dukes, Principal Carbon Reduction Officer

11 Welcome and Apology

The Chair welcomed attendees to the meeting and an apology for absence was received from County Borough Councillor J Barton.

12 Declaration of Interest

In accordance with the Code of Conduct, there were no declarations made pertaining to the agenda.

13 Minutes

The Sub-Committee **RESOLVED** to approve the minutes of the meeting held on 3rd October 2022 as an accurate record.

The Chair informed Members that a date would be circulated in due course for the visit to the local peat sites.

14 Hydro Electric Generation at Treforest Weir

The Director of Corporate Estates provided the Sub-Committee with an overview of feasibility work completed for the development of a low-head Hydro Electric Scheme at Treforest Weir on the River Taff, Treforest, Pontypridd. The report was based on a preliminary feasibility report produced by a specialist company that reviews the hydropower options at Treforest Weir.

The Cabinet Member for Education, Youth Participation & Welsh Language thanked the Director for the report and commented that RCT and the wider valleys were blessed with an abundance of water and that it made sense to look at the water as a possible source of green energy generation. The Cabinet

Member felt it was an exciting and positive step forward and looked forward to future updates.

The Cabinet Member for Development and Prosperity echoed the previous comments and asked Members to look for similar projects in their local areas. The Cabinet Member spoke of the increase in cost of energy, which made such projects more viable and agreed that selling the energy through private wire would increase the amount of savings.

In response to the Cabinet Member's comments, the Director informed Members that an all-encompassing report with information on approximately 30 potential sites within RCT would be presented to the next meeting of the Sub-Committee.

The Chair sought clarification on the terminology 'private wires' and it was explained that 'private wire' is used to differentiate between the wire coming from Western Power or National Grid. The Director hoped that the wire would be to a Council owned property, to maximise the used of the energy generated and explained that for every KW used, the Council would not have to buy it from the grid at the quadruple rates.

The Chair thanked the Director for the informative report and the Sub-Committee **RESOLVED**:

1. To note the content of the report as part of the works agenda of the Climate Change Cabinet Sub-Committee;
2. To further expenditure in the development of the proposals, as detailed in section 10.3, to undertake further design studies to assess full potential and develop detailed project proposals; and
3. To receive further progress reports, at appropriate intervals, in the development of the proposals.

15 Hydro Electric Generation at Dare Valley Country Park

The Director of Corporate Estates provided the Sub-Committee with an overview of feasibility work completed for the development of a high-head Hydro Electric Generation Scheme at Dare Valley Country Park. The report was based on a feasibility study produced by a specialist company that reviewed the viability of a previously considered scheme.

The Cabinet Member for Environment & Leisure spoke positive of the project and commented on the favourable return and the continuous supply of water at the site, even in a drought. The Cabinet Member spoke of the various on-site options to generate energy, such as Dare Valley Country Park Hotel complex, café and caravan park and looked forward to future updates following the feasibility studies and consultation.

For Members' information, the Energy & Carbon Reduction Manager provided a brief overview of the difference between a high-head and a low-head Hydro Electric Generation Scheme. Members were informed that low-head consists of low pressure but large volumes, whereas high-head consists of low volume but high pressure.

The Chair thanked the Director for the report and the Sub-Committee **RESOLVED**:

1. To note the contents of the report as part of the works agenda of the Climate Change Cabinet Sub-Committee;
2. To further expenditure in the development of these proposals, as detailed within section 10.2 of the reort, to undertake further design studies which assess the full potential of the project and to help develop detailed project proposals; and
3. To receive further progress reports, at appropriate intervals, in the development of the proposals.

16 Update Report on the Carbon Footprint Project and Welsh Public Sector Net Zero Carbon Report for 2021-2022

The Director of Corporate Estates provided the Sub-Committee with an update on the Welsh Public Sector Net Zero Carbon (NZC) Reporting Scheme and Rhondda Cynon Taf Council's submission under that regime for the Financial Year 2021/22.

The Principal Carbon Reduction Officer explained that the scheme was still evolving, hence the Welsh Government had introduced three additional carbon emission reporting requirements from 2021/22 namely:

- Staff Business Travel
- Staff Commuting
- Home Working

The officer paid tribute to colleagues across the Local Authority, who now had to collect data, when there was previously no need.

The Cabinet Member for Development and Prosperity took the opportunity to thank the officers for the tremendous amount of work undertaken in not only gathering the information, but for producing the user-friendly Dashboard.

The Chair echoed the comments and expressed her gratitude to officers for undertaking the work in such a timely manner.

The Cabinet Member for Education, Youth Participation & Welsh Language commented on the quality of the data, which would allow Members and Officers to track progress and increase efforts to decarbonise as a Local Authority. The Cabinet Member noted the changes introduced by Welsh Government in terms of the recording of emissions requirements but felt that the overall picture was that emissions were reducing, despite the embedded emissions being in the supply chain. The Cabinet Member was pleased to note initiatives such as the Council's bid to Welsh Government for the construction of new schools, one of which had a fully funded net zero option.

The Chair thanked the Director for the report and the Sub-Committee **RESOLVED**:

1. To note the contents of the report as part of the ongoing work under the remit of the Climate Change Cabinet Sub Committee;
2. To publish the data on the Councils Carbon Footprint Dashboard; and

3. To receive further reports providing additional updates on progress as / when deemed appropriate.

17 RCT Tree, Woodlands and Hedgerow Strategy

The Director of Prosperity and Development provided the Sub-Committee with the opportunity to consider the responses to the consultation on the draft RCT Tree, Woodlands and Hedgerow Strategy.

Furthermore, the Director informed the Sub-Committee of the feedback and comments of the Climate Change, Frontline Services & Prosperity Scrutiny Committee following its pre-scrutiny of the Tree, Woodland and Hedgerow Strategy at its meeting on the 15th November 2022.

The Cabinet Member for Environment & Leisure was disappointed by the lack of public engagement with the consultation but valued the comments made by those who did respond and the Scrutiny Committee members. The Cabinet Member emphasised the importance of tree planting, both in urban areas and in parks.

The Chair thanked the Director for the report and highlighted the importance of looking after the current trees and hedgerows, as well as planting new.

The Sub-Committee **RESOLVED:**

1. To note the comments and observations of the Climate Change, Frontline Services & Prosperity Scrutiny Committee; and
2. To endorse the Tree, Woodlands and Hedgerow Strategy.

18 The Council's S6 Biodiversity Duty: Three Year Report to Welsh Government 2020-2022

The Director of Prosperity and Development provided the Sub-Committee with an update on the progress in developing and implementing the Council's S.6 Biodiversity Duty Action Plan; and sought approval to submit the Action Plan to Welsh Government and to publicise it on the Council's website as required by the Environment (Wales) Act 2016.

The Chair thanked the Director for the report and thanked the officers for the work behind the scenes.

The Sub-Committee **RESOLVED:**

1. To consider the information contained within the report and the progress made to integrate consideration of biodiversity into all Council services, since the last formal report in 2019; and
2. To endorse the report and Appendix A for submission to Welsh Government and for inclusion on the Council's website.

This meeting closed at 3.35 pm

C Leyshon
Chair.

Mae'r ddogfen hon ar gael yn Gymraeg / This document is also available in Welsh.

RHONDDA CYNON TAF COUNTY BOROUGH COUNCIL

CLIMATE CHANGE CABINET SUB COMMITTEE

23rd March 2023

RCT Climate Change Engagement Plan (2023-25)

REPORT OF THE DIRECTOR OF DEMOCRATIC SERVICES & COMMUNICATION CHRISTIAN HANAGAN IN DISCUSSION WITH THE CABINET MEMBER FOR CLIMATE CHANGE & CORPORATE SERVICES COUNCILLOR CHRISTINA LEYSHON

Author: Chris Davies (Corporate Policy & Consultation)

1. PURPOSE OF THE REPORT

1.1 By 2030, the Council's targets are to become a carbon neutral organisation, to work with residents and businesses within the County Borough to ensure the whole County Borough is as close as possible to carbon neutral and to contribute to the Welsh Government's ambition of a Net Zero public sector.

1.2 The Climate Change Engagement Plan plan outlines how we propose to communicate and involve stakeholders in developing our approach to working together to achieve these targets.

2. RECOMMENDATIONS

It is recommended that the Cabinet Sub Committee

2.1 Considers the information contained in the report and the proposed engagement approach.

2.2 Subject to any amendments approves the approach outlined:

2.3 Agree that to develop the approach going forward and deliver on the communications and engagement activity, there is a need for existing staff support, initially provided by the named responsible officers, working in partnership with key environmental stakeholders .

3. REASONS FOR RECOMMENDATIONS

3.1 To assist the Council in its aim to meets its Carbon Neutral targets by 2030.

3.2 To support the implementation and delivery of the Council's wider Tackling Climate Change Strategy – 'Think Climate RCT'

4. BACKGROUND

4.1 In March 2021, the Cabinet, and the as then Climate Change Cabinet Steering Group, received a report that provided the opportunity for Members to consider the Draft Council Tackling Climate Change Strategy and agreed to engage and consult with residents and businesses on the Council's response to Climate Change.

4.2 The Draft Tackling Climate Change Strategy was subject to a wide-ranging consultation, as part of a new Climate Conversation. Across the Council. The Climate Change conversation was branded as '"Let's Talk Climate Change RCT'" and used a new online engagement platform as a pilot, to host key climate change projects. The methods of engagement on the site include an online survey, polls, the ability to map localised comments, a stories box and a section where users are invited to provide their ideas on a certain topic (stories).

4.3 In addition to the 'Let's Talk' online conversations the Council worked with services and partners to develop appropriate engagement for individual climate change projects based on some of the work underpinning the climate change strategy. We have also had conversations and conducted surveys with our own staff.

4.4 In June 2021 Cabinet received feedback from the Climate Change Cabinet Steering Group and the Overview and Scrutiny Committee, respectively, to consider a report on the Draft Climate Change Strategy (2021-2025) Consultation Responses. Members agreed that Officers use the feedback to inform the development of the final Climate Change Strategy and agreed to support the approach of facilitating an ongoing climate change conversation with residents, local businesses and partners, linked to the final Climate Change Strategy workplan

4.5 The feedback from the various conversations helped to inform and develop the Council's final draft Climate Change Strategy – 'Think Climate RCT 2022-25', which was approved at a Cabinet meeting in June 2022.

4.6 In agreeing the Tackling Climate Change Strategy in June 2022, the Cabinet also agreed that we refresh and continue the programme of engagement and widen this activity to continue to involve as wide a range of stakeholders and align with relevant associated strategies.

4.7 The Council also committed to continue to work with national and local environmental groups to engage with residents, communities and businesses, and to maximise community expertise in order to also support and encourage different lifestyle choices.

5. CURRENT POSITION

5.1 The Climate Change Strategy outlines our approach will include ;

"…encouraging and facilitating changes in lifestyle and choices in all staff and their representatives, elected Members, residents, local business as well as our visitors to Rhondda Cynon Taf. The involvement of younger people will be key to creating, developing and delivering this plan over the long term and we will be continuing to progress this involvement through school eco councils, our Youth Fora and through other community organisations. Plans to progress our work, particularly in engaging with people face to face have been affected by restrictions arising from the pandemic but we are keen to accelerate our plans safely now that restrictions are lifted. As well as listening to what people, communities and businesses are telling us, we also need to support and challenge the Welsh Government to do better and to break down any national barriers that mitigate against local action."

5.2 Specifically in the Think Climate PEOPLE section of the Strategy it states;

"…. residents and staff told us they would like to see us increase awareness of climate change and provide opportunities for residents and communities to become involved in developing solutions that will contribute to the County Borough becoming Carbon Neutral"

We have responded to this feedback and plan to;

1. Provide clear, simple and practical ways to encourage everyone to play their part to reduce carbon at home, in work and getting about.
2. Listen to and understand what our residents of all ages are telling us.
3. Invite and encourage residents, businesses, staff and their representatives to discuss what the Council can do to help them to reduce their carbon footprint and what they can do for themselves.
4. Work with young people, including through schools and their eco councils, youth groups and Arts projects in ways they can help shape our plans for their future.
5. Work with Community Groups, including the Older Persons Advisory Group and those that are seldom heard so that they can contribute to and shape our plans for the future. 19
6. Develop intergenerational projects that enhance the skills and lives of people in our communities.
7. Provide opportunities for communities to become involved in developing local solutions through Neighbourhood Networks.

5.3 In addition to our own plans, the Welsh Government has developed a draft Strategy for Public Engagement & Action (2022-26), the consultation in which closed in December 2022, and a Climate Change Engagement Approach (2022–26). Within both the framework and the strategy, Welsh Government highlights the need for government, public bodies, businesses and communities across

Wales to work together to tackle the shared challenges of the Climate and Nature emergencies in a Team Wales approach.

5.4 Taking account of all of the above and so that we can fully contribute to the 'Team Wales' approach, The Council has set out its approach to Climate Change engagement in the accompanying **Climate Change Engagement Plan (2023-25)**. The plan outlines the detail on how we propose to engage with, involve and communicate with stakeholders in developing and implementing our approach to achieving the targets set out in the new Tackling Climate Change Strategy (2022-25) and is outlined in section 6 below, with the full plan attached to this report as an Appendix. The plan is currently a working document and will be updated regularly as new information becomes available.

6 RCT Climate Change Engagement Plan (2023-25).

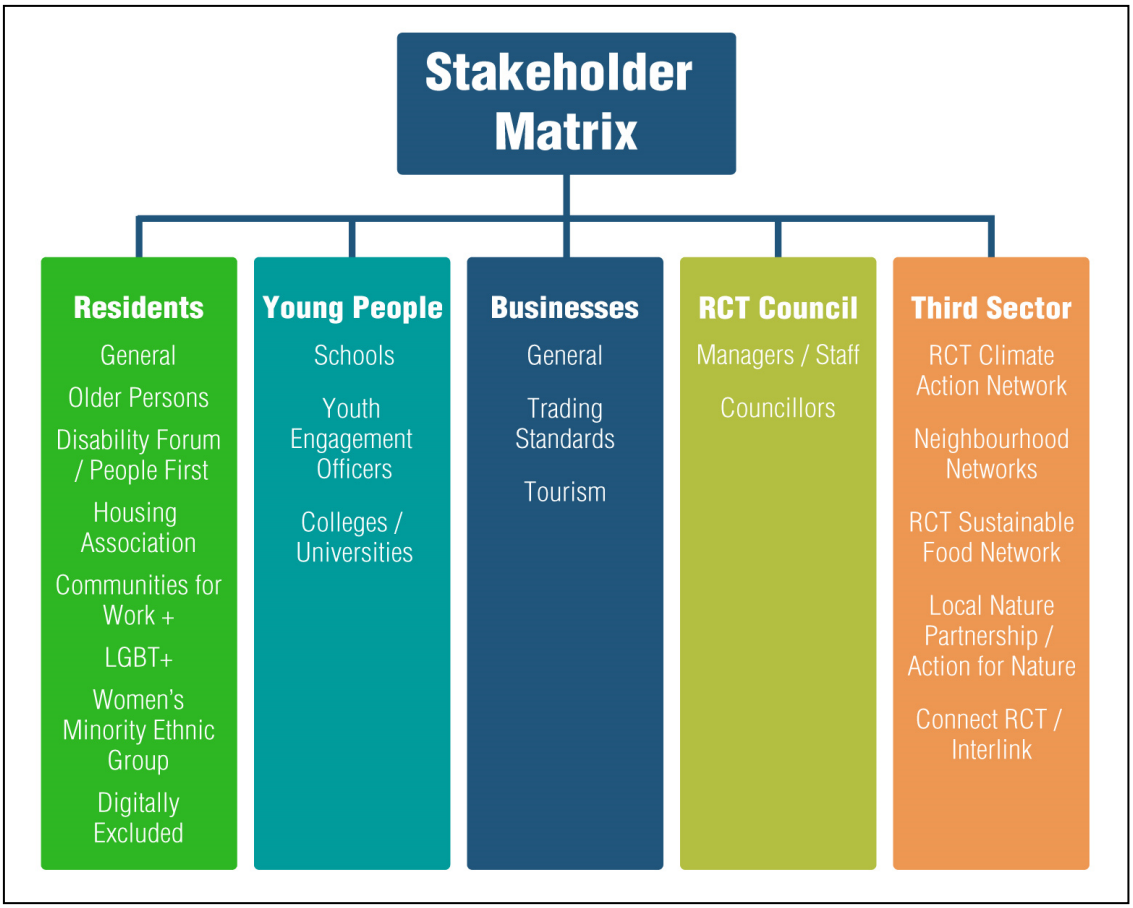
6.1 The aim of the plan is to set out how we will engage with residents, schools, businesses, staff and the third sector on considering greener and more sustainable lifestyle choices whilst raising the profile and increasing awareness about Climate Change. This will be supported by identifying best practice and sharing information about the good work that is already taking place across the Council, in our schools as well as by individuals and groups in the wider community.

6.2 The Climate Change Engagement Plan sets the framework that will enable the Council to implement new and innovative ways of engagement with our residents through events, campaigns and competitions, whilst encouraging residents to consider their current lifestyle choices and behaviours in their homes, at work, how they travel etc.. All these steps can contribute to more sustainable living and fewer carbon emissions.

6.3 Raising climate awareness with all our stakeholders and encouraging, inviting and supporting action is key if the Council is to achieve its climate goals and play our part in Tackling Climate Change. The Engagement Plan embeds the key engagement/involvement actions from our Tackling Climate Change Strategy (2022-25) – 'Think Climate RCT'. This approach will ensure that the Council delivers a strategically aligned approach towards engagement and communication across the Council's services and the County Borough.

6.4 To ensure that the Council takes a holistic approach to County Borough-wide engagement, the plan includes an Engagement Matrix which aligns with the Council's current Involvement and Engagement Framework. The Matrix identifies the key stakeholder groups within the County Borough and associated subgroups. It is vital that those people who are traditionally seldom heard have a voice in tackling climate change as well as our key stakeholders and third sector community leaders who are well placed to support societal behaviour change.

6.5 The full Plan is attached in Appendix 1. Set out below is Matrix of Stakeholders and a summary of the engagement plan. The Stakeholder Matrix and accompanying engagement plan will be developed and widened to include other groups as our community engagement widens.



Residents including our 'seldom heard' groups

6.6 As set out in the Council's Involvement Strategy Involvement and Engagement Framework, the Council is committed to involving and engaging with residents, communities and other stakeholders as part of our everyday business. The Council has a good track record of engaging with residents and the information collected is valuable, as it helps to understand what residents think, where the Council needs to act and how to improve Council services. The subgroups set out in the Matrix include the majority of our residents, including those who are seldom heard via a range of selected networks and groups. Whilst this categorisation may not account for all stakeholders in the County Borough, we will strive to continue to develop our knowledge and understanding of our communities.

Young People

6.7 The Tackling Climate Change Strategy (2022-25) is clear in that the involvement of younger people will be key to creating, developing and delivering our plans over the long term and we will be continuing to progress this involvement through schools, school eco councils and our Youth Fora. A suite of age-appropriate climate related activities will include discussions about how we can implement and support sustainable behaviours and how we can help inform and prepare young people to about decisions about their futures in the emerging green sectors.

Businesses

6.8 If we are to reach the Welsh Government Net Zero ambition by 2030, we must fully engage the many different types of businesses across RCT. We can achieve this by supporting local businesses, particularly small and medium sized enterprises, by helping them to develop the skills and knowledge they need to be better prepared to tender for suitable opportunities for Council contracts as they arise. We must also offer support via distributing information on sourcing more sustainable products locally and selling to local markets. Engagement with businesses will take place via Town Centre Forums and BIDs along with business surveys. We will work with our tourism partners and businesses to engage with visitors and tourists.

Inside the Council

6.9 All our Councillors and staff have a role to play in reducing the Council's Carbon Footprint in the decisions they make, the services they deliver and by their everyday actions. Many staff will be directly involved in energy saving projects, others will have less obvious contributions, but these are as important. As Councillors also represent communities and over 80% of our staff live in RCT we can all play a key role in supporting and encouraging climate initiatives across the County Borough. To achieve this, we have committed to putting in place training and awareness raising, providing opportunities for ongoing climate conversations with staff, listening to their views and ideas and reinforcing climate messages through clear and relevant messaging of the council's commitments. The most recent staff Net Zero network took place on 6 March and considered how the Council services can best prepare to to meet the requirements of the new non domestic Waste Regulations which will come into effect on 1 October 2023.

Third Sector Organisations

6.10 We know there is excellent sustainable and 'green' work going on in our communities undertaken by volunteers and well-established community groups, networks and representative bodies. It is important that we recognise how we can best support these community groups and our third sector and community partners and learn from them to generate the most value from these projects/activities through our services. Our Climate Commitments contained within our Think Climate Strategy include a commitment ' to working with Third Sector organisations, Neighbourhood Networks, the RCT Climate Action

Network, and other partners to maximise our collective resources to achieve a Carbon Neutral County Borough'. Our ongoing climate conversation will seek to maximise the information sharing and engagement opportunities already in place and learn from community experts.

6.11 Delivering this commitment relies on the Council engaging with community groups via our third sector partners, keeping our messaging and purpose open, transparent, and consistent in order to work cohesively and constructively across the County Borough.

7. EQUALITY AND DIVERSITY IMPLICATIONS / SOCIO-ECONOMIC DUTY

7.1 The engagement approaches outlined in the strategy will provide further opportunities for more diverse groups of residents and stakeholders to get involved in the Climate Conversation and provide a range of methods including online and specific engagement opportunities for targeted groups, such as young people and older people and those previously seldom heard or digitally excluded.

8. WELSH LANGUAGE IMPLICATIONS

8.1 The engagement approaches outlined in the strategy will be fully bilingual and will be inclusive of Welsh speakers as part of the general public consultation.

9. CONSULTATION / INVOLVEMENT

9.1 The engagement and involvement approaches put in place to deliver the Tackling Climate Change Strategy to date have enabled the Council to set a strategic position without full access to residents as a result of previous Covid restrictions. However, our aim is to strengthen our approach through the Climate Change Engagement Plan. The plan is a live document that will be updated from information arising from feedback from all stakeholders as well as emerging best practice and new Welsh Government engagement frameworks.

10. FINANCIAL IMPLICATION(S)

10.1 There are no financial implications directly aligned to this report. There are staff time implications for those officers nominated as leads in the plan.

10.2 Moving forward, any agreed programme of work to deliver the Council's Climate Change Engagement Plan will be incorporated into Medium Term Financial Planning arrangements to ensure resource requirements are reviewed, challenged and planned for.

11. LEGAL IMPLICATIONS *OR* LEGISLATION CONSIDERED

11.1 There are no legal implications aligned to this report, at this stage.

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

12.1 The Council has committed to becoming a Carbon Neutral organisation by 2030 and to work with residents and businesses to ensure the whole County Borough is Carbon Neutral as close as possible to 2030 also This contributes to the delivery of the Council's Corporate Plan 'Making a Difference' – 2020-24 and three Priorities set out in the Plan and to meet the carbon reduction targets. The Engagement Plan seeks to inform and shape decisions to tackle climate change and applies the Sustainable Development (SD) principle i.e. '*acts in a manner which seeks to ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs.'* The Engagement Plan applies the five ways of working to achieve the SD principle, particularly Involvement, Collaboration and Integration.

13. CONCLUSION

13.1 This report and associated **Climate Change Engagement Plan (2023-25)** outlines how we propose to communicate with and involve stakeholders in developing our approach to achieving the targets set out in the new Tackling Climate Change Strategy – 'Think Climate RCT' (2022-25)

13.2 The plan sets out how we are going to engage with residents, schools, businesses, staff and the third sector on considering greener and more sustainable lifestyle choices whilst raising the profile and increasing awareness about climate change. Among other things, this can be achieved by identifying best practice and providing easy access to information about the good work that is already taking place across the Council, in our schools and wider community.

13.3 The plan embeds the key engagement/involvement actions from our Tackling Climate Change Strategy (2022-25), aligns with the Welsh Government's 'Team Wales' approach and is flexible enough to respond or include any national arrangements likely to emerge from consultation on 'the WG strategy for engaging the general public in action on Climate Change' This will ensure that the Council delivers a strategically aligned approach towards Climate Change engagement, involvement and communication across both the Council and the County Borough.

APPENDIX 1 - RCT Climate Change Engagement Plan (2023-25)

Aims

The aim of this plan is to set out how we are will engage with residents, schools, businesses, staff and the third sector in considering greener and more sustainable lifestyle choices, whilst raising the profile and increasing awareness about climate change.

This plan will enable the Council to implement new and innovative ways of engagement with our residents, e.g. through events, competitions and campaigns, whilst promoting and encouraging residents to consider their current choices and behaviours in their homes, at work, how they travel etc. and so reduce their carbon footprints'. The plan also ensures that the Council delivers the communication and engagement actions set out in the **Tackling Climate Change Strategy (2022-25)** – 'Think Climate RCT' across the Council and the County Borough, including

1. Providing clear, simple and practical ways to encourage everyone to play their part to reduce carbon at home, in work and getting about.
2. Listening to and understanding what our residents of all ages are telling us.
3. Inviting and encouraging residents, businesses, staff and their representatives to discuss what the Council can do to help them to reduce their carbon footprint and what they can do for themselves.
4. Working with young people, including through schools and their eco councils, youth groups and Arts projects in ways they can help shape our plans for their future.
5. Working with Community Groups, including Older Persons Advisory Group and those that are seldom heard so that they can contribute to and shape our plans for the future.
6. Developing intergenerational projects that enhance the skills and lives of people in our communities.
7. Providing opportunities for communities to become involved in developing local solutions through Neighbourhood Networks.

In doing so we will increase the number of opportunities for residents and communities to be involved in the ongoing climate change conversation.

Introduction

We are making progress to tackle climate change, but we all need to do more, and faster, if we are to reduce our carbon emissions, help to reverse the damage to our planet and adapt to the changes already happening, both within the Council and within the County Borough. The United Nations have declared that this must be a decade of action[1] if we are to reverse the last thirty years of damage and keep global temperatures from reaching the irreversible 1.5^{o}C. Although higher industrial sector reductions and public sector action will both help contribute to the achievement of this target, everyone in Wales must also do their part. To play our part in this national climate emergency, Welsh Government have developed a Strategy for Public Engagement & Action (2022-26) and a Climate Change Engagement Approach (2022–26).

[1] UN, December 2019; Decade of Action, [2] CCC, December 2020; Advice Report: The Path to a Net Zero Wales

Within both the framework and the strategy Welsh Government highlight the need for government, public bodies, businesses and communities across Wales to work together to tackle the shared challenges of the climate and nature emergency in a **Team Wales** approach.

To contribute to the 'Team Wales' approach, we have set out how we t plan to involve, engage, and communicate with our stakeholders within a **Climate Change Engagement Plan (2023-25)**. The plan outlines our approach to achieving the targets set out in the **Tackling Climate Change Strategy (2022-25)** – 'Think Climate RCT'. All feedback will be used to help the Council understand stakeholder needs and behaviours and help target areas of concern e.g. food scarcity, flood risk cost of green energy, travel options etc. In addition , the approach outlined in the plans focuses on awareness raising and communicating key messages.

During the development if this plan, the country has been faced with an economic crisis, which creates financial challenges for a vast number of households including here in Rhondda Cynon Taf. The plan recognises the impact of these challenges and working with stakeholders, strives to create a framework that helps our residents and communities to overcome the financial and other barriers that that they tell us are stopping them from changing to 'greener' habits.

We plan to combine the need to address action needed to respond to climate change and concerns about cost-of-living ~~is~~ through the new 'Think Climate RCT' campaign to be launched in March 2023; spreading climate awareness particularly focusing on using less, wasting less and saving more – '**Use Less. Waste Less. Save More'.** As a part of this new campaign the Council will be renewing its climate change web presence on the Council's website and developing a new 'Let's Talk Climate Change' project which are set out in more detail in the plan below.

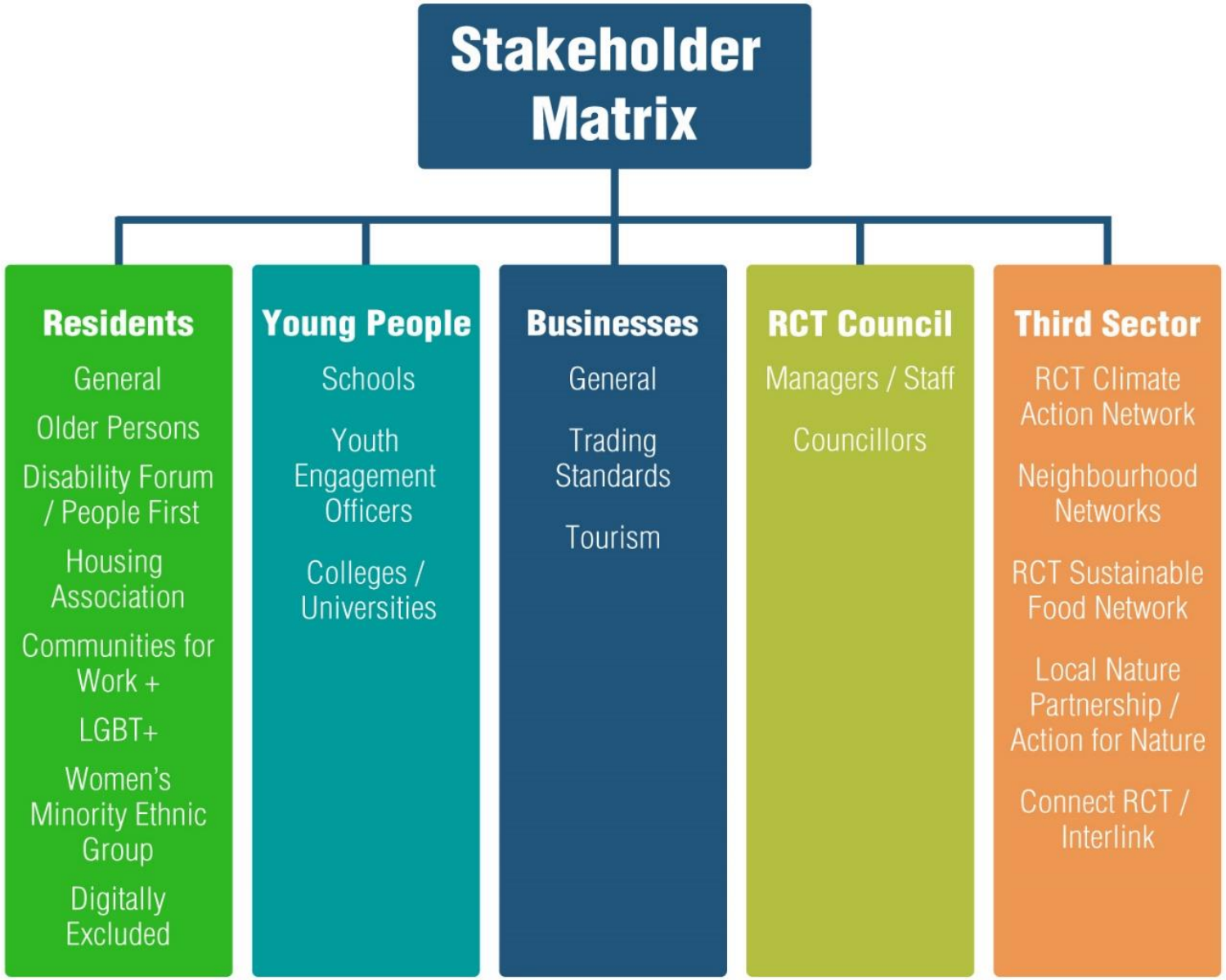
Our core messages are

- adopting greener or more sustainable behaviours which can also help to save money,
- we don't have to be perfect when it comes to reducing carbon, by changing one thing it could make a big difference for the planet and in our pocket.

Although progress is being made and there many people implementing more sustainable ways of living, further action is needed across all areas of society. Studies suggest that it will not be possible to achieve a Net Zero target by only pursuing an approach that focusses on industry and the public sector. 60% of the changes needed to achieve Net Zero will require some element of societal behavioural change[2]. This supports to the need for Climate Change Engagement with residents and communities if we are to reach our climate change targets as a Council, across the County Borough and Wales.

To ensure that the Council takes a holistic approach to County Borough-wide engagement, the engagement matrix below aligns with the Council's Involvement and Engagement Framework, and identifies the key stakeholder groups and Sub groups within the County Borough. It is vital that those who are seldom heard have a voice in tackling climate change as well as our key stakeholders who can support societal behaviour change. Whilst some stakeholders may not be accounted for in the matrix at this stage, this will be further developed and the work progresses.

[1] UN, December 2019; Decade of Action, [2] CCC, December 2020; Advice Report: The Path to a Net Zero Wales


Stakeholder Matrix
Residents
General
Older Persons
Disability Forum / People First
Housing Association
Communities for Work +
LGBT+
Women's Minority Ethnic Group
Digitally Excluded
Young People
Schools
Youth Engagement Officers
Colleges / Universities
Businesses
General
Trading Standards
Tourism
RCT Council
Managers / Staff
Councillors
Third Sector
RCT Climate Action Network
Neighbourhood Networks
RCT Sustainable Food Network
Local Nature Partnership / Action for Nature
Connect RCT / Interlink

1. Residents including our 'seldom heard' groups			
As set out in the Council's Involvement Strategy Involvement and Engagement Framework*, the Council is committed to involving and engaging with residents, communities and other stakeholders as part of our everyday business.* The Council has a good track record of engaging with residents and the information collected is valuable, as it helps to understand what residents think, where the Council needs to act and how to improve Council services. The following subgroups aim to include the majority of our residents, including those who are seldom heard via a range of selected networks and groups. The Council recognises that this categorisation may not account for all stakeholders in the County Borough.			
Subgroup	**Method(s) of Engagement**	**Comms**	**Responsible Officer**
General	**Let's Talk RCT:** Range of engagement tools available inc., online surveys, maps, ideas, stories etc. 'Let's Talk Climate Change' to be updated as a live project to inform the Climate Change action/plans. Specific projects as requested by Cabinet and Climate Change Cabinet Sub Committee e.g. 'Let's Talk Trees', 'Let's Talk EV'. Must ensure feedback and reports are made available, so that people can see what was done as a result of the engagement. **Face to Face Events:** Face to face engagement for all strategic/high level projects. Aim to include face to face events aligned with each 'Let's Talk' projects, where resources allow. Utilise existing events such as budget consultation to engage. Set engagement tools/graphics to be used at these events.	Develop a 'Calendar of Events' linking to national, global and local climate change awareness days and campaigns to promote projects/work items for example carbon monitoring/ reduction projects, 'Let's Talk' site launches, events occurring across RCT. Use social media channels i.e. press releases, Twitter and Facebook for promotion and Call to Action (CTA) Develop more content via engagement to be included on websites i.e. blogs, videos, photos, case studies etc.	Chris Davies working with responsible Officers

1. Residents including our 'seldom heard' groups			
Older Persons	**Meetings of Forums:** All activity to be promoted across the wider Older Person Forums via the Older Persons Advisory Groups (OPAG). **Digital/Standard Materials/Survey:** Spread climate awareness by promoting Think Climate campaign. OPAG has 5 Fora across RCT with up to 500 members who are willing to engage and receive guest speakers. **Intergenerational Activities:** When possible, involve children and young people with older persons via OPAG to work together on projects utilising the different skills between the generations.	All content generated i.e. videos, photos, case studies and further information to be captured on website. Communicate/demonstrate how feedback is used via social media channels, blogs, website info. Promote all intergenerational activity via social media channels.	Chris Davies
Disability Forum/People First	**Meetings of Forums:** Consider other ways of contacting disabled service users for relevant projects, e.g. EV rollout and impact on disabled car drivers. **Digital/Standard Materials/Survey:** Spread climate awareness by promoting Think Climate campaign in plain English formats.	Communicate activity with the group in accessible formats. All content generated i.e. videos, photos, case studies and further information to be captured on website.	Melanie Warburton
Housing Association – Trivallis	**Digital/Standard Materials/Survey:** There are 30,000 people living in 14,000 social	A similar approach will be taken for what we identify as our seldom heard residents.	Daniel Evans/ Keryl Lanfear

1. Residents including our 'seldom heard' groups			
	housing homes in RCT. Trivallis manages 70% of these homes. Through using this existing network, we can engage with people to better understand our residents' thoughts and attitudes around climate change. Promotion of the 'Think Climate' campaign via these networks provide access to money and carbon saving tips.	By taking a consistent and mirrored approach via our comms and engagement, we can ensure that feedback is collated accurately and feedback to residents is communicated clearly. All content generated i.e. videos, photos, case studies and further information to be captured on website. Communicate/demonstrate how feedback is used via social media channels, blogs, website info, reports, infographics.	
Communities for Work Plus	**Digital/Standard Materials/Survey:** 'Communities for Work Plus' provides a working/mentoring programme to get people back in the workplace. This is another network that would enable engagement with those who may not be engaged with Council/Climate activity. Promotion of the 'Think Climate' campaign via these networks will aid in money and carbon saving tips.		Andy Phillips
Women's Minority Ethnic Group	**Digital/Standard Materials/Survey:** Primarily a group where Black, Asian & Minority ethnic women meet to discuss various issues. Using this network, we can engage those who may feel seldom heard to better understand our		Ginnie Davies /Melanie Warburton

1. Residents including our 'seldom heard' groups			
	residents' thoughts and attitudes around climate change. Promotion of the 'Think Climate' campaign via these networks will aid in spreading climate awareness.		
LGBT+	**Digital/Standard Materials/Survey:** Opportunities through our various staff networks as well as 'Project Unity' to involve our LGBT+ residents directly into the climate conversation. Through using these networks we can engage those who may feel seldom heard to better understand our residents' thoughts and attitudes around climate change. Promotion of the 'Think Climate' campaign via these networks will aid in spreading climate awareness.		Ginnie Davies/Melanie Warburton
Digitally Excluded	**Standard Materials/Survey:** The Council provides a number of alternatives to online engagement such as written communication, telephone/contact centre and freepost to ensure that hard to reach people, those having reduced or no access to the internet and those who prefer to engage through traditional methods have opportunities to contribute their views and opinions.		Chris Davies

2. Young People			
The Tackling Climate Change Strategy (2022-25) – 'Think Climate RCT' is clear in that the involvement of younger people will be key to creating, developing and delivering our plans over the long term and we will be continuing to progress this involvement through schools, school eco councils and our Youth Fora. A suite of age-appropriate climate related activities will include discussion about how we can implement and support sustainable behaviours and how we can help inform and prepare young people to about decisions about their futures in the emerging green sectors.			
Subgroup	**Method(s) of Engagement**	**Comms**	**Responsible Officer**
Schools	**Surveys:** 'Your Voice' Survey and Good Practice Questionnaire to establish baseline across RCT schools and further understand the attitudes of young people towards climate change as well as raising climate awareness. **Corporate Communications:** Ensure clear messaging on climate issues occurs before engagement activities are sent, allowing schools to prepare time for the young people to engage in materials. **Climate Network:** Setting up an education climate network of staff champions. Scope to involve learner champions as a part of this network – would be the duty of the staff champion to appoint learner champions and could link to climate related competitions. **Climate Events:** Hosting a pupil climate change event, developing a local 'eco-schools' award, piloting further	Share climate related activities achieved through schools through social media channels Promote RCT schools-wide competitions through social media channels – CTA updates	Richard Bowen/Dan Williams

	biodiversity projects within school grounds and carrying out school climate competitions.		
Youth Forums inc. Youth Parliament, Youth Clubs and thematic subgroups	**Climate Conversations:** Opportunity to involve engaged young people in higher level discussions such as to how will the Council reach its 2030 goal of becoming Net Zero. **Digital/Standard Materials/Survey:** Aim to hold face to face and virtual climate change discussions with young people through the existing forums and through facilitation from the Youth Engagement & Participation Officers (YEPOs).	Utilise YEPS Instagram and website to post stories and posts such as polls, information, events etc. All content generated i.e. videos, photos, case studies and further information to be captured on website. Updates/posts through 'WICID'	Rhys James
Colleges/ Universities	**Digital/Standard Materials/Survey:** Set up specific engagement days/events at colleges across RCT and the University of South Wales (USW).	Press Release on USW Intranet Use social media channels i.e. press releases, Twitter and Facebook for promotion and Call to Action (CTA)	Rhys James

3. Businesses			
If we are to reach the Welsh Government's Net Zero ambition by 2030, we must fully engage the many different types of businesses across RCT. We can achieve this by supporting local businesses, particularly small and medium sized enterprises, by helping them to develop the skills and knowledge they need to be better prepared to tender for suitable opportunities for Council contracts as they arise. We must also offer support via distributing information on sourcing more sustainable products locally and selling to local markets.			
Subgroup	**Method(s) of Engagement**	**Comms**	**Responsible Officer**
General	**Meetings of Forums:** Encourage members to include climate change on meeting agendas as standard item to stimulate discussion via: - Town Centre Forums - Town Centre Business Improvement Districts (BIDs) - Chambers of Trade - Business Forums - Business Improvement Districts **Surveys:** Raise climate awareness within the business community through the distribution of information/business surveys as appropriate and when available. **Procurement:** Consistently distribute information on Council contracts and sourcing local sustainable products.	Communicate/demonstrate how feedback is used via social media channels, blogs, website info, reports, infographics. Distribute new information via email when available.	Darren Notley/Marc Crumbie

3. Businesses			
Trading Standards Networks	**Digital/Standard Materials/Survey:** Night-time economy across RCT has a large Black, Asian & Minority Ethnic presence e.g. late-night shops, food business etc. Trading Standards feed directly into these groups so there is opportunity to engage businesses as well as our seldom heard residents. Promotion of the 'Think Climate' campaign via these networks will aid in spreading climate awareness.	Communicate/demonstrate how feedback is used via social media channels, blogs, website info, reports, infographics.	Judith Parry/ Melanie Warburton
Tourism	**Climate Events:** Working with our tourism partners and businesses enables us to improve our engagement with visitors/tourists in Rhondda Cynon Taf. For example, being stallholders at Aberdare Festival and Big Welsh Bite during the summertime. **Procurement:** Consistently distribute information on Council contracts and sourcing local sustainable products.	All content generated i.e. videos, photos, case studies and further information to be captured on tackling climate change and tourism website.	Nerys Royal/ Scott Treeby

4. Inside the Council

All our Councillors and staff have a role to play in reducing the Council's carbon footprint in the decisions they make, the services they deliver and by their everyday actions. Many staff will be directly involved in energy saving projects, others will have less obvious contributions, but these are as important. As Councillors also represent communities and over 80% of our staff live in RCT we can all play a key role in supporting and encouraging climate initiatives across the County Borough. To achieve this we have committed to putting in place training and awareness raising, providing opportunities for ongoing climate conversations with staff, listening to their views and ideas and reinforcing climate messages through clear and relevant messaging of the Council's commitments.

<table>
<tr><th>Subgroup</th><th>Method(s) of Engagement</th><th>Comms</th><th>Responsible Officer</th></tr>
<tr><td>Councillors</td><td>Climate Conversation:
It is important for Councillors to continue to champion climate related issues in climate related staff events and comms, when applicable, to reinforce the message that Climate Change is a challenge for all levels of staff in Rhondda Cynon Taf.</td><td rowspan="2">A similar approach will be taken for staff at all levels as it is important that our messaging is clear and consistent that we must all play our part in tackling climate change, leading by example and demonstrating to residents that the Council is committed to becoming carbon neutral by 2030. We can communicate this to staff via:
- RCT Staff Email updates
- Promote more sustainable projects via Council website and social media channels
- Create climate change newsletter using information from services.
- INFORM updates (staff/managers)
- iTrent news updates (staff/managers)
- Manager briefings (managers)
- Weekly bulletins (councillors)</td><td>Emma Wilkins</td></tr>
<tr><td>Managers/ staff</td><td>Meetings of Forums
Continue to update and encourage engagement, participation and involvement in the Climate Conversation via:
- Staff forums (Green Space)
- Net Zero events

Training:
Continue to and improve our current staff training opportunities via:
- Induction training
- Mandatory e-learning training
- Climate change bitesize sessions</td><td>Lesley Lawson/ Dave Spencer</td></tr>
</table>

4. Inside the Council			
	Climate Competitions/Events: Encourage good practice within teams by implementing climate competitions and events i.e. active travel to work.		

5. Third Sector Organisations

We know there is lots of excellent sustainable and 'green' work going on in our communities by volunteers and well-established groups, networks and representative bodies. It is important that we recognise how we can best, support these community groups and our third sector and community partners to generate the most value from these projects/activities through our services. We are committed to working with Third Sector organisations, Neighbourhood Networks and other partners to maximise our collective resources to achieve a Carbon Neutral County Borough. Our ongoing climate conversation will maximise the information sharing and engagement opportunities already in place and seek to learn from community experts.

It is essential that the Council engage with community groups via our third sector partners keeping our messaging and purpose clear, open, transparent, and consistent in order to work cohesively and constructively across the County Borough.

Subgroup	Method(s) of Engagement	Comms	Responsible Officer
Third sector Networks e.g. Interlink/ Connect RCT	**Promote Ongoing Work:** 'Connect RCT' already run climate change focussed events/ workshops such as information talks, organised litter picks, growing, repair shop days, environment walks etc. Interlink has a large 'reach' when promoting wellbeing and volunteering and enable the Council to run events through RCT Connect where there already engaged community members.	Drive engagement via media streams, promoting work that is already happening with the aim to increase volunteering: - include community events on 'Let's Talk Climate Change' calendar - social media channels include CTA (Call To Action) - staff email - promote Interlink Newsletter that will contain information around events	Simon James
Neighbourhood Networks	**Digital/Standard Materials/Survey:** Neighbourhood Networks are Council 'managed' networks that have Climate Change as a standing item on their meeting agendas. This access allows us to provide surveys and information directly to the groups for their consideration. This consideration will, in turn, provide the opportunity for comprehensive	Communicate/demonstrate how feedback is used via social media channels, blogs, website info, reports, infographics.	Deb Hanney/ Lynne Williams

5. Third Sector Organisations			
	feedback and challenge, and a clear understanding of the barriers for residents and community groups focused on green activity. Promotion of the Think Climate campaign via these networks will aid in spreading climate awareness.		
Sustainable Food Network (SFN)	**Promote Ongoing Work:** Use digital and face-to-face methods of communication to involve residents in the various different food networks, projects and groups as listed below: Sustainable Food Network (SFN) - 'Community Growers' meet quarterly to share projects. - 'Food Pantry' meet quarterly to focus on community food support and redistributing surplus food - 'Big Bocs Bwyd' meet quarterly to focus on food surplus at schools Land Management - Community Agroforestry Mapping - Food Growing Feasibility Mapping - Land Transfer Signposting Mapping Food Hub Local procurement project to have one central	Help boost sales of 'The Vintage Kitchen' through promotion via media channels as well as a press release. SFN aims to reach gold certification long-term but must reach bronze in the short term. This can be achieved through driving engagement for networks within SFN: - social media channels - staff email - press release - awareness days (e.g., World Food Day – Annual/November) All mapping work are essentially products allowing better access and information for residents. This is also the case for the **Food Hub**. Upon competition these products can be promoted via: - social media channels - press release - awareness days	Sam Evans

5. Third Sector Organisations			
	hub for storing surplus food in the County Borough.		
Local Nature Partnership	**'Let's Talk Trees' Project:** Engagement page for residents to find information and share experiences with trees, as well as access to LNP. **Planting/Growing Events:** Promote events programmes listed on Local Nature Partnership website as well as the 'Community Growers' network within SFN.	The Local Nature Partnership encourages residents to take positive action for nature in RCT to protect local habitats and species and membership is open to everyone. Drive volunteering via: - awareness days (e.g., World Soil Day – Annual/December) - include on Council climate change webpage. Use media channels to promote biodiversity walk and other climate activities that develop	Elizabeth Dean
RCT Climate Action Network	**Promote Ongoing Work:** RCT 'Climate Action Network' connects community projects focussed on Climate Change Council needs to be clear on approach to shared value with Third Sector; offering our services to help community groups grow through the networks identified, as well as promoting their good work through our media channels.	Use media streams to promote work that is already happening, driving engagement and more volunteers: - include community events on 'Let's Talk Climate Change' calendar - social media channels include CTA - staff email - promote information about community events across the County Borough by distributing the Climate Action Network Newsletter	Dawn Davies

5. Third Sector Organisations			
	Promotion of the Think Climate campaign via these networks will aid in spreading climate awareness.		

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RHONDDA CYNON TAF COUNTY BOROUGH COUNCIL

CLIMATE CHANGE CABINET SUB-COMMITTEE

23RD MARCH 2023

CORPORATE DECARBONISATION STRATEGY AND ACTION PLAN

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

Author(s): Anthony Roberts, Head of Energy & Carbon Reduction, and Paul Dukes, Principal Carbon Reduction Officer

1. PURPOSE OF THE REPORT

1.1 The purpose of the report is to enable Members to consider, review and approve the adoption of the draft Corporate 'Decarbonisation Strategy' and embedded 'Action Plan', the aim of which is to provide a clear pathway, with defined timescales, to assist the Council in delivering upon its target of achieving Carbon Neutral status by 2030.

2. RECOMMENDATIONS

It is recommended that Members:

2.1 Note and comment upon the contents of this report and the Council's draft Decarbonisation Strategy and Action Plan (*in Appendix 1*).

2.2 Consider the draft Decarbonisation Strategy and Action Plan as providing the pathway for the Council to:

a) Meet its stated carbon reduction targets as published in the Council's Climate Change Strategy 2022-2025

b) Contribute in response to the nationally declared climate and nature emergencies.

2.3 Agree to maintain and prioritise the Decarbonisation debate, to increase and/or vary the speed and scope of the Council's Decarbonisation work, and to recognise the need for all stakeholders to work together to make a positive difference.

2.4 Agree to receive regular updates on progress and to amend the action plan as appropriate to ensure we remain on target to meet our ambitions.

3. REASONS FOR RECOMMENDATIONS

3.1 To provide a clear pathway and defined timescales to enable the Council to become Carbon Neutral by 2030 and to encourage the County Borough to move as close as practicable towards the Carbon Neutral ambition, by the same date.

3.2 To contribute towards the Welsh Government's carbon ambitions for a NZ public sector by 2030 and the target of a Net Zero Wales by 2050.

4. BACKGROUND

4.1 In 2017, the Welsh Government set out its own carbon reduction ambitions for the public sector by 2030 and this is reflected by RCTCBC's own carbon neutral commitments that are reflected in the Council's Climate Change Strategy 2022-2025 (*see 4.5 below*).

4.2 The Council has made progress in many aspects of its work, to adapt to and mitigate the effects of Climate Change, including a reduction in the Council's Carbon Footprint of around 1,200tCO2e in 2021/22 from the equivalent 2019/20 baseline (*the effects the 'Covid-19 Pandemic' mean that the data for 2020/21 has been set aside for the purposes of this report*).

4.3 Over the past three years, the Council have calculated and reported its carbon emissions, under the Welsh Government Public Sector Net Zero Reporting Scheme. The annual reporting process has provided insight into the emissions profile of the Council's operations and services. The ongoing reporting process has developed into a sound basis to inform the development of future work to drive the Council's efforts to become a Carbon Neutral Council by 2030.

4.4 In March 2019, the Welsh Government published 'Prosperity for All: A Low Carbon Wales' which includes Policy 20: *To support the public sector to baseline, monitor and report progress towards carbon neutrality.* Considering this, in early 2022, the Council engaged with the Carbon Trust to assist in the development of a Corporate Decarbonisation Strategy and Action Plan which are the subject of this report.

4.5 The draft Strategy and Action Plan was developed, with assistance from the Carbon Trust, and is designed to deliver results on commitments made within the Council's Climate Change Strategy 2022-2025 (*also referred to as the 'CCS' or 'Think Climate RCT'*). Whilst the CCS is a County Borough-wide Strategy, the targets and ambitions identified therein are cross referenced within the Action Plan that is included in the Corporate Decarbonisation Strategy, and it is intended that the ambitions of Corporate Decarbonisation Strategy will help underpin and support the wider ambitions of the CCS.

5. THE DEVELOPMENT PROCESS

5.1 The Council's Decarbonisation Strategy (*as set out in Appendix 1*) seeks to provide a strategic overview of the key priority areas for action across all Council Service Areas. This plan will guide future policy direction and set out clear measures to aid the Council in delivering upon its targets and ambitions as laid out in the Climate Change Strategy 2022-2025.

The purpose of the Strategy is to set out specific, high reaching actions to:

- Reduce the Council's operational emissions, i.e. emissions generated from buildings, transport and staff vehicle use.
- Reduce the Council's supply chain emissions, i.e. emissions generated from the Council procurement of goods and services.
- Maximise Council land use for its sequestration potential and the self-generation of renewable electricity.

5.2 The Strategy is built upon the four priority areas for decarbonisation, namely, Transport, Buildings, Supply Chain & Land Use, as set out in Welsh Government's 'Net Zero Carbon Status by 2030: A Public Sector Route Map'. Informed by this, the Decarbonisation Strategy has presented key headline commitments to drive decarbonisation up to 2030. The commitments are Council specific and are aligned with those set out in the Climate Change Strategy.

5.3 The Strategy has been developed collaboratively with support across multiple service areas. A series of workshops were held with Officers from across the Council, focussed around the four stated categories. The workshops provided an opportunity for Service Areas to promote their current and ongoing carbon reduction measures and identify / assess the feasibility of further interventions that could be taken forward in support of decarbonising the Council's services and operations.

5.4 It was clear from the workshop feedback that we need to do more, and at pace, to make sure that all our services and all our staff are contributing to reducing carbon emissions across all aspects of the Council's business, so that every aspect of our work contributes to the reductions in the Council's Carbon Footprint.

5.5 Utilising 2019/20 as the baseline year, a range of pathway modelling scenarios were predicted, using the Science Based Target initiative methodology (SBTi), and are presented to highlight the Council's expected emissions trajectory, from 2019 through to 2030.

5.6 The Strategy looks at a range of emissions pathways, that have been modelled to represent the range of options considered achievable to meet what can be foreseen as 'a scale for Carbon Neutrality'.

5.7 In consideration of this initial assessment, we will need to closely monitor our performance, with the Plan being considered for use as a 'live document', which will be updated regularly. This will give the opportunity to assess the scale of action with each review and allow for the action plan to be updated, to take account of improvements in future technologies and enhanced methods of delivery.

5.9 The pathway modelling underscores the scale of the challenge ahead. The Actions contained within the Strategy's 'Action Plan' are thus of paramount importance in driving the Council's efforts to meet the 2030 targets. Likewise, the 'Action Plan' covers the overarching strategic aims for each of the four themes. The Plan categorises actions into those that should be achieved in the near-term (*i.e. to the end of calendar year 2025*) and further ambitions that should be achieved over the longer-term (*i.e. out to the target of 2030*). As with the Strategy's development, the Actions contained therein are cross-service related and will require adoption by each Service Area, as required.

6. EQUALITY AND DIVERSITY IMPLICATIONS / SOCIO-ECONOMIC DUTY

6.1 A Socio-Economic Impact Assessment has been completed and the main considerations are listed below.

6.2 Under the Equality Duty (set out in the Equality Act 2010), local authorities are required to have 'due regard' to the need to eliminate unlawful discrimination, as well as to advance equality of opportunity and foster good relations between people who share a protected characteristic and those who do not.

6.3 In line with the Equality Act 2010, Rhondda Cynon Taf County Borough Council is committed to working towards achieving the Well-Being goal of a more equal Wales, as set out by the Well-Being of Future Generations Act (*also refer to item 12*), and ensuring equal access to its services and opportunities, no matter background or circumstance.

6.4 The Decarbonisation Strategy will aim to support the alleviation of poverty and deprivation, improve access to employment opportunities, improve access to skills and to develop improved infrastructure and healthier communities. The Council will ensure that decisions taken in support of the Decarbonisation Agenda will advocate for disability and accessibility equality in the roll out of related works, in line with the Council's Equality and Diversity Policy.

7. WELSH LANGUAGE IMPLICATIONS

7.1 A Welsh Language Impact Assessment has been completed and the main considerations are listed below.

7.2 Public bodies must work to achieve all seven well-being goals put in place by the Well-Being of Future Generations Act (*also refer to item 12*), with achieving a Vibrant Culture and Thriving Welsh Language being one of the seven goals. The Welsh Government's ambition is to see the number of people able to enjoy speaking and using the Welsh language to reach a million by the year 2050, for further information see the Cymraeg 2050 Welsh Language Strategy. The Council intends to support this ambition by providing the conditions to facilitate an increase in the use of the Welsh Language.

7.3 Under the Welsh Language (Wales) Measure 2011, RCTCBC has a duty to comply with specific standards in respect of the delivery of Welsh language services. To ensure that we meet the requirements of the Measure, we have undertaken a Welsh Language Impact Assessment to assess the likely effects of the Decarbonisation Strategy on the Welsh language, both within our workforce and in the community, so that we can mitigate any negative impacts and enhance the positive impacts.

7.4 The Council will ensure that decisions taken in support of decarbonisation will support the aims and ambitions of the Council's Welsh Language Promotional Strategy.

7.5 Due to the high level and diverse nature of the Decarbonisation Strategy & Action Plan, assessing the detail of the likely effects of the strategy for staff and potentially residents on Welsh Language will be further addressed in implementations that are undertaken to deliver the actions required to meet the Council's decarbonisation ambitions.

8. CLIMATE CHANGE IMPLICATIONS

8.1 The intent of this report is in furthering the ambitions for the Council's Climate Change Agenda, and if the potential as described herein and contained in the Appendix is realised, the outcomes could deliver a significant contribution towards tackling climate change.

9. CONSULTATION / INVOLVEMENT

9.1 Workshops have been held with key officers across the Council to help develop and inform the draft Strategy and Action Plan. The draft Strategy and Action Plan was also presented to the Senior Leadership Team on 11th January 2023 for their comments and endorsement.

10. FINANCIAL IMPLICATION(S)

10.1 The costs for engaging The Carbon Trust to help develop the Decarbonisation Strategy and Action Plan have been meet from within existing budgets.

10.2 It is recommended, that moving forward, an agreed programme of work to deliver the Council's Decarbonisation Strategy and Action Plan should be incorporated into Medium Term Financial Planning arrangements to ensure resource requirements are reviewed, challenged, and projected for.

11. LEGAL IMPLICATIONS *OR* LEGISLATION CONSIDERED

11.1 There are no legal implications aligned to this report.

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

12.1 The purpose of this report is to provide an update relating to the progress of the development of the Decarbonisation Strategy and Action Plan as it relates to the work of the Climate Change Cabinet Sub Committee.

12.2 The Council's commitment to the sustainable development principle of taking decisions that meet our current needs, without compromising the ability of future generations to meet their own needs, across the four aspects of Well-being of Wales described in the Well-being of Future Generations Act, i.e. economic, social, environmental, and cultural well-being.

12.3 This report reflects the Sustainable Development principles of the Well-being of Future Generations Act. The actions that arise because of the future recommendations of the Climate Change Cabinet Sub Committee will be considered by the Council's Cabinet and it will take full regard to the seven national Wellbeing Goals.

13. CONCLUSION

13.1 In its published Climate Change Strategy, the Council has set the ambitious target to become a Carbon Neutral Council by 2030, and for the County Borough to be as near to Carbon Neutral as possible by the same date. The attached draft Decarbonisation Strategy and Action Plan provide a clear pathway, and defined timescales, to empower the Council to make substantial progress towards achieving its own stated 2030 targets as well as contributing towards the Welsh Government's carbon reduction ambitions.

13.2 Achieving the 2030 carbon targets will require all stakeholders, and the communities of Rhondda Cynon Taf, to work together. The Corporate Decarbonisation Strategy and Action Plan encourages collaborative action, which will be essential in achieving the targets set out.

Contact Officers: ***Anthony Roberts 01443 281146*** **and**
Paul Dukes 01443 281186

Appendix '1'

The 'Draft' Corporate 'Decarbonisation Strategy' and accompanying 'Action Plan'

…….. *follows on the next page.*

Decarbonisation Strategy (2023 – 2025)

RHONDDA CYNON TAF COUNTY BOROUGH COUNCIL

March 2023

The Carbon Trust's mission is to accelerate the move to a decarbonised future.

Authors:

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Published in the UK: 2023.

Contents

1. Executive Summary

1.1. Ambition

Rhondda Cynon Taf County Borough Council (RCTCBC) is committed to supporting the Welsh Government's target of a net zero public sector by 2030. The Council has now set its target to align with the Science Based Target Initiative's net zero definition to mitigate at least 90% of Council emissions by 2030, and balance residual emissions with greenhouse gas (GHG) removals.

By working across the Council's internal operations, staff in all departments can play their part in reducing emissions both in their work and by supporting carbon reduction initiatives. Emissions from the supply chain will be tackled by continuing the ongoing engagement with suppliers and working in partnership to calculate the carbon impact of goods and services provided to the Council.

The Council has a large portfolio of land assets in its ownership and has developed plans to increase the amount of carbon dioxide this land sequesters. By improving the quality of peatland and quantity of woodland, and increasing the amount of renewable energy generated on this land through large scale wind and solar farms, the Council aims to balance its residual emissions.

The scale of the challenge to achieve net zero should not be underestimated, and even with the carbon reductions the Council has already achieved and projects we plan to implement in the next decade, more still needs to be done to reach the target. The Council plans to reduce emissions through energy efficiency measures, switching to low carbon transport and heating, and increasing the amount of energy generated and carbon sequestered on its land. The Action Plan within this Strategy states clear actions for the next few years and the longer-term ambitions which give direction for the longer term. The Action Plan will be used as a live document which will be updated regularly, and the scale of action increased with each review.

1.2. Carbon footprint

The Council's carbon footprint as reported in the Welsh Government Public Sector Net Zero Reporting (Net Zero Reporting) has been used within this Strategy. Emissions for the baseline year of 2019/20 were 125,702 tCO_2e.

The Net Zero Reporting approach has evolved over in recent years, with the scope increased to include homeworking and staff commuting. Over the three years since the baseline, emissions of the Council have dropped, with a significant dip in 2020/21 due to the Covid-19 pandemic. In particular, 2020/21 saw reduced commuting and business travel, and reduced carbon intensity of purchased goods & services (e.g. less construction procured goods). Emissions for 2021/22 were 120,907 tCO_2e, with renewable energy use equivalent to 7,439 tCO_2e.

RCTCBC 2019/20 Carbon Footprint Baseline	Operational emissions	Supply chain emissions
	34,528 tCO_2e	91,174 tCO_2e

1.3. Pathway scenarios

To better understand the Council's emissions pathway, the carbon footprint has been separated into Operational emissions, Supply chain impacts, and Land Use & Renewables contributions.

A range of pathways have been modelled from the baseline 2019/20 carbon footprint; these consider the future expected carbon intensity of the electricity grid. Trajectories to 2030 have been developed for Business As Usual, and an expected pathway range (high/low intervention scenarios) is based on the initiatives within the Action Plan. Using the Science Based Target initiative (SBTi), a net zero target is shown as a 90% reduction on the 2019/20 baseline.

As can be seen in the operational emissions pathway, even after the actions planned and the grid decarbonisation have been accounted for, there is still a gap to target to achieve net zero emissions in 2030.

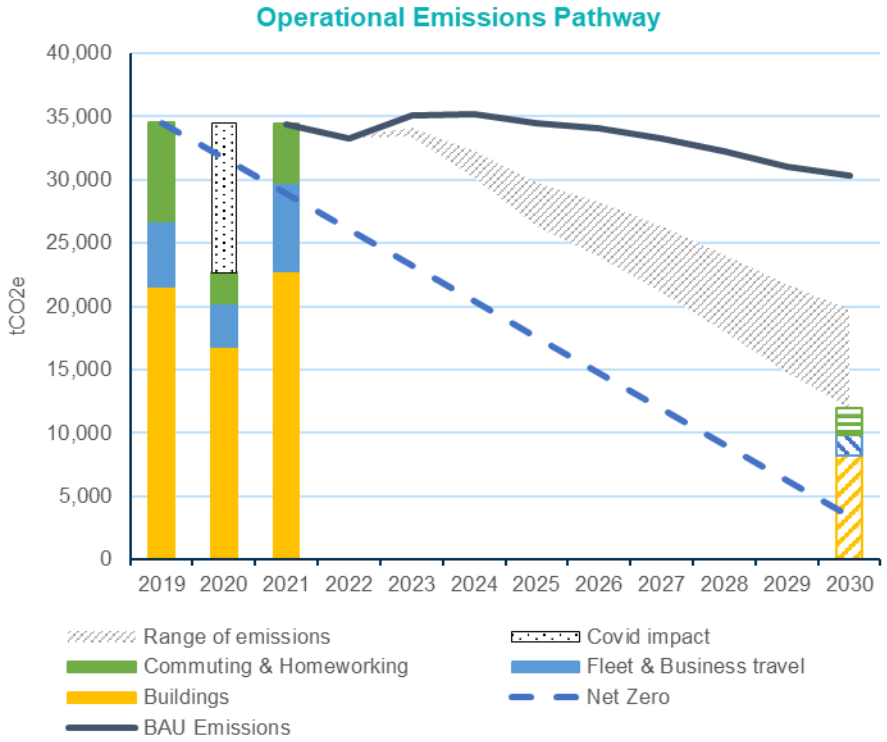
2030 Emissions

In 2030:

- The operational emission pathway estimates 11,949 tCO_2e residual emissions – **this does not meet the 90% mitigation target of 3,453 tCO_2e**; this demonstrated the challenge to meet net zero and the need to do more to bridge the gap
- The supply chain will be engaged and able to accurately report on their emissions contributions – this will allow the supply chain emissions pathway and target to be updated
- Renewable energy generation capacity is targeted to be over 20MW

Operational emissions

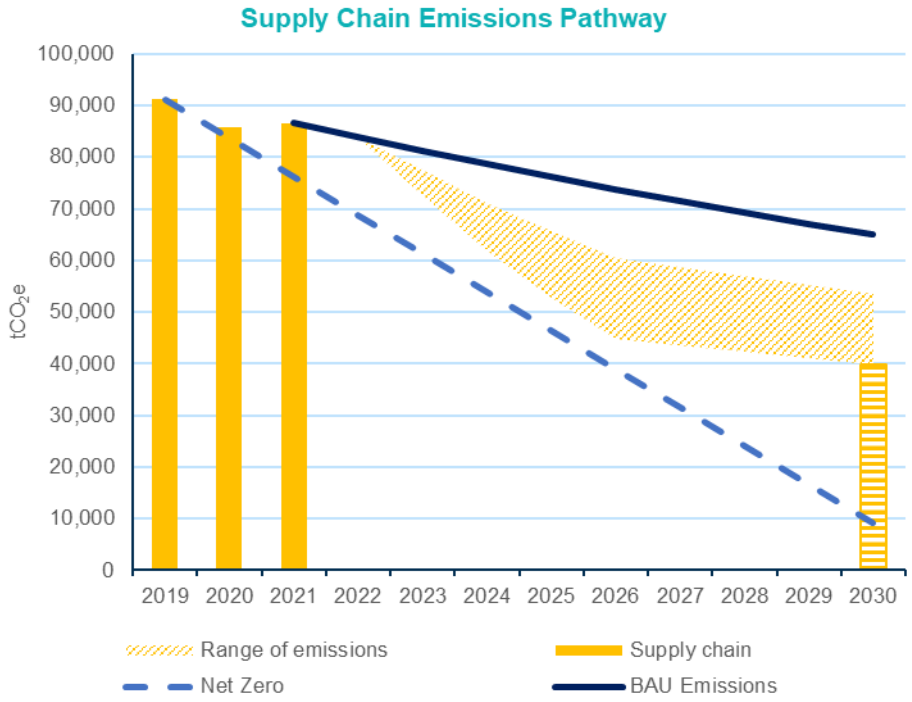
Operations emissions are attributed to heat and electricity use in buildings and streetlighting, fuel use from owned fleet and business travel, and commuting and homeworking apportioned emissions. These are all Scope 1 & 2 emissions, with selected Scope 3 emissions where there is operational control (e.g. business travel, upstream energy).



Supply Chain

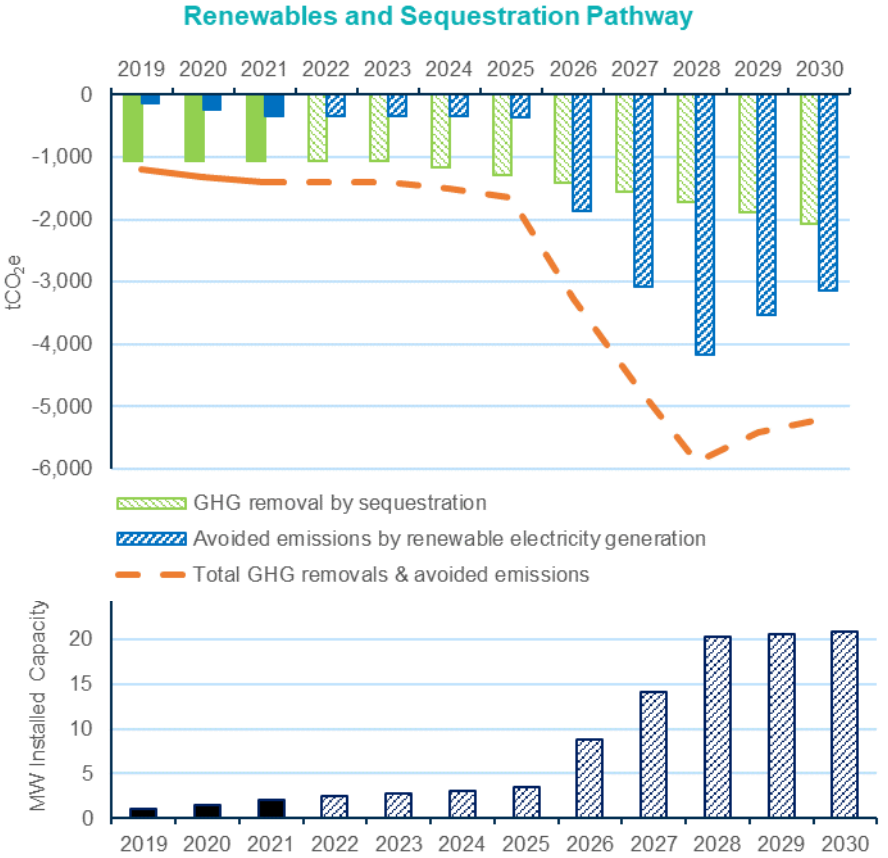
Supply chain emissions are indirect Scope 3 emissions associated with purchasing goods, services and capital assets.

The supply chain emissions pathway is highly estimated, with the baseline footprint data calculated from procurement spend data rather than supplier specific emissions. The approach, footprint, and pathway will evolve in the coming years as data improves – this is expected to include a baseline adjustment and re-targeting for 2030.



Land Use & Renewables

Through dual reporting, the Council's wider efforts for decarbonisation can be reported alongside the carbon footprint. This includes active GHG removals from sequestration (e.g. peatland restoration), and grid-connected renewable power generation schemes.



1.4. Headline Aims

There are 46 initiatives within the Action Plan; to summarise these, the following headline aims up to 2030 have been drawn out.

OPERATIONAL	**Buildings**	• Improve energy efficiency of all buildings • Maximise renewable energy generation and low carbon heating across the estate
	Transport	• Increase the number of electric vehicles in the Council fleet • Ensure that over half of all journeys are taken by public transport, bike or walking, or by electric vehicles
SUPPLY CHAIN	**Goods & Services**	• Improve carbon accounting for all purchased goods, services and construction • Only procure supplies and services from businesses that are striving to reduce their carbon emissions and, in doing so, actively support low carbon and local suppliers as part of our wider transition to net zero
	Capital Assets	• Work with key suppliers to evaluate and reduce emissions from building and infrastructure projects
LAND USE & RENEWABLES	**Sequestration**	• Assess the condition of peatlands across the county and rewet where required to improve quality of land • Encourage natural regeneration and increase afforestation of woodland and hedgerows
	Renewables	• Increase renewable energy generated from Council land and buildings from the 2021/22 baseline (2MW) to 20MW by 2025

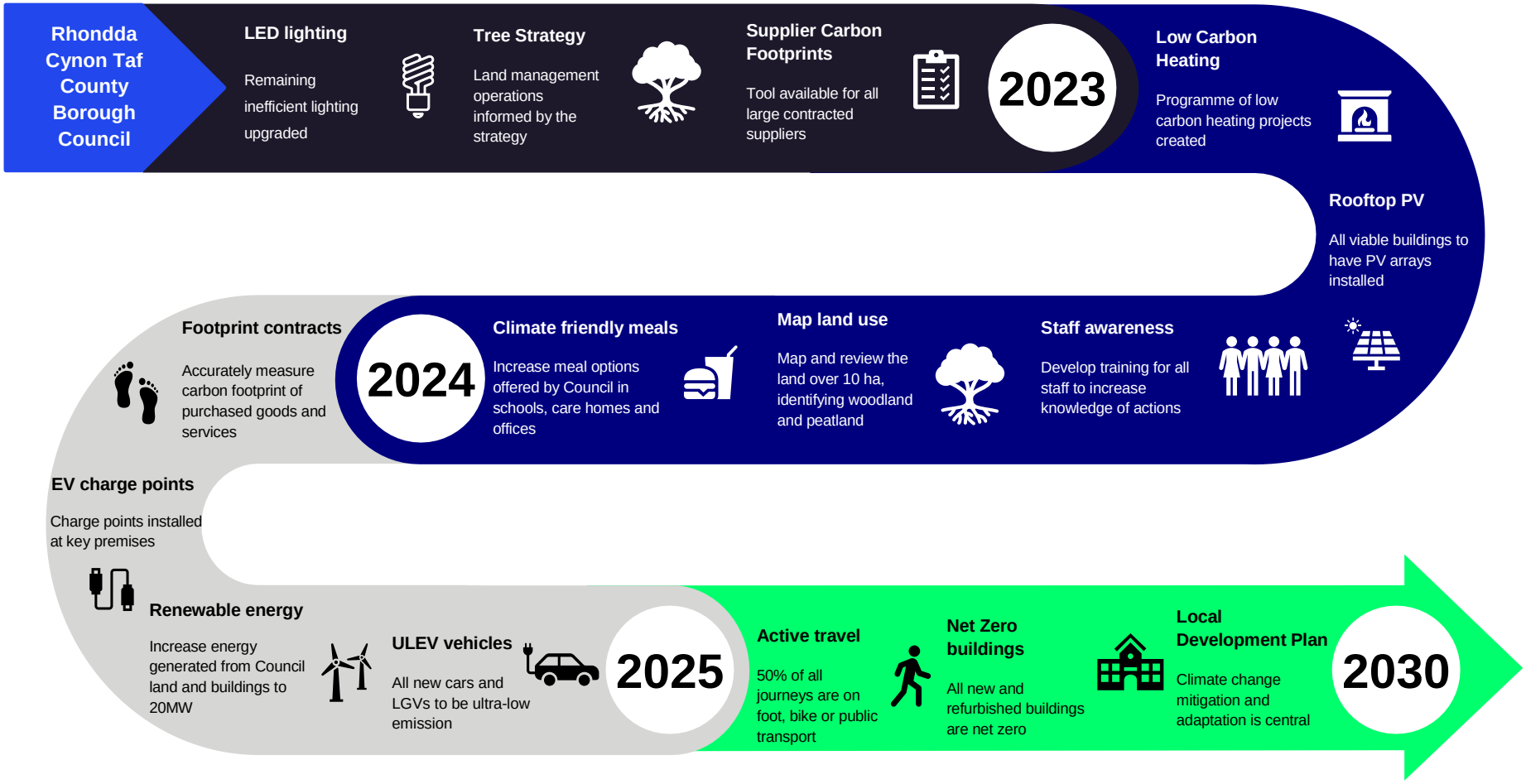
The emissions pathways set the expected operational, supply chain and avoided emissions as follows. Where there is an emissions pathway 'range' – the higher scale of delivery / intervention has been used. For both 2025 and 2030, the expected pathway is above the net zero target line.

RCTCBC emission pathway	2025	2030
Operational emissions	26,354 tCO_2e	11,949 tCO_2e
Supply chain emissions	52,808 tCO_2e	39,759 tCO_2e
Total GHG removals and avoided emissions	-1,644 tCO_2e	-5,220 tCO_2e

1.5. Next Steps

A visual timeline of action is shown by the route map below, with an interim date of the end of 2025 set to align with the next Welsh carbon budget. By 2030, RCTCBC aims to meet the SBTi's definition of net zero for their operational emissions.

This Strategy will undergo a review process in 2025 to re-assess the Action Plan progress and the pathway. This review will enable consideration to be given to the technological advancements which will assist decarbonisation progress, and reduce any reliance on offsetting to achieve net zero.



2. Introduction and context

2.1. Drivers for decarbonisation

Wales and Welsh Government legislation

Wales has been at the forefront of environmental, social and governance improvements, accounting for the impact climate change will have on future generations and enshrining in law mitigation and adaptation measures to reduce the worst consequences of global heating.

The Well-Being of Future Generations (Wales) Act, 2015, requires public bodies listed in the Act to work together to improve the "social, economic, environmental and cultural wellbeing of Wales." The Act sets out seven well-being goals, with the aim of addressing several challenges including climate change to ensure that future generations have a good quality of life.

The **Environment (Wales) Act, 2016**, promotes the sustainable management of natural resources in Wales, balancing the competing priorities of building the necessary infrastructure and protecting vital ecosystems. The Act requires Welsh Ministers to set decarbonisation targets and carbon budgets - an essential first step in reducing greenhouse gas emissions. The revision to the Act (Amendment of 2050 Emissions Target) Regulations 2021, sets the target for Wales to achieve **net zero by 2050**.

In 2019, Welsh Ministers and the Senedd **declared a climate emergency**, reaffirming Wales' commitment and determination to tackle the climate crisis. Subsequently, the Welsh Government published **Prosperity for All: A Climate Conscious Wales** – a climate change adaptation plan which outlines policies and proposals for decarbonisation to meet the goals of the first carbon budget.

To achieve net zero by 2050, a series of 5-year carbon budgets between 2016 and 2050 have been agreed upon by the Welsh Government in **Net Zero Wales: Carbon Budget 2,** published in 2021. This outlines 123 policies and proposals to meet the second of these carbon budgets (2021-2025), by reducing the required 37% of emissions compared to the second carbon budget baseline.

Net Zero Wales also commits the **public sector to achieve net zero by 2030**. In line with this commitment, the **Welsh Government Net Zero Strategic Plan** (2022) sets the approach for their own operational and supply chain emissions. Welsh Government also have modelled their pathway to fall short of a net zero 90% minimum mitigation – this further demonstrates the challenge to meet net zero, and the need to maximise delivery and further develop the approach to bridge the gap.

Welsh ministers have the ambition for public bodies and community enterprises in Wales to develop over 100MW of new renewable capacity by 2026. They also have the aim for 1GW of electricity generated in Wales to be locally owned by 2030, and for all new energy developments to have an element of local ownership.

Regional and local area energy planning

Collaboration will form a key part in achieving the Council's and the Government's ambitions for net zero. RCTCBC, along with nine neighbouring local authority areas form the Cardiff Capital Region. **The Cardiff Capital Region Energy Strategy**, supported by the Welsh

Government Energy Service, sets the strategic approach to deliver on the region's ambitions for decarbonising its energy system. The Council is now developing its Local Area Energy Plan to identify projects and target development priorities for local net zero energy.

RCTCBC corporate policies

RCTCBC have committed to becoming net zero in their **Corporate Plan 2020-24 'Making a difference'**. The Corporate Plan acknowledges that delivering our Climate Change commitment is one of the greatest challenges the Council faces. The Corporate Plan commits to delivering three main priorities, all of which will contribute to and benefit from tackling climate change:

RCTCBC's priorities for 2020 - 2024

The Council's asset strategy is set out in the **Corporate Asset Management Plan for Property Assets for 2018/2023** and incorporates initiatives for energy efficiency and estate rationalisation which benefit carbon emissions.

The internal **Carbon Reduction Programme for FY2022/23** is part of an annual planning cycle that has been in place for over a decade. This yearly investment programme ensures sustained momentum and a protected budget for energy and carbon reduction.

The most recent revisions to the **Procurement Strategy 2021-24** have included a raft of measures around understanding and measuring carbon emissions in the supply chain. One of its key projects has been to engage with suppliers to improve product and service carbon footprinting.

The Council have developed an **Energy Management Strategy** which sets out measures staff and Building Managers should follow in Council buildings, in relation to heating and cooling temperatures.

The Council have developed numerous policies and schemes to promote the Sustainable Transport Hierarchy including:

- The Cycle 2 Work scheme
- Car Salary Sacrifice Scheme including electric vehicle leasing
- Electric Vehicle Charging Strategy
- Active Travel scheme

RCT County Borough-wide policies

The Council have ambitions for the whole of RCT county borough to become net zero soon after 2030 and has recently published their overarching **Climate Change Strategy 'Think Climate RCT'** (2022) which shows the Council's position on their own internal and County Borough-wide carbon emissions. This county borough strategy sets initiatives and commitments for RCTCBC as an organisation which have been taken forward to align with this Strategy.

The **Climate change engagement plan** is the communications strategy for the whole county borough. As the majority of RCTCBC staff (79%) also live in the county, this strategy will be relevant to them.

2.2. Carbon neutral and net zero

Previously, RCTCBC committed to becoming carbon neutral by 2030. However, net zero is considered the more ambitious target and is the one set by Welsh Government for the public sector. The technical definition of net zero is still emerging, however, Welsh Government has utilised the SBTi definition within their Net Zero Strategic Plan.

The main difference between net zero and carbon neutral, based on common definitions as set out below, is the approach to residual emissions and offsetting.

Carbon neutral covers Scope 1 and 2 (operational emissions) and is covered by the PAS2060 standard. There is no requirement for a defined reduction target, with neutrality achieved by offsetting greenhouse gas emissions.

Net zero, as defined by the Science Based Targets initiative (SBTi), covers Scopes 1, 2 and 3 and demands emissions reductions in line with limiting global heating to 1.5°C. Furthermore, 90% of the baseline footprint must be reduced with only 10% of the baseline footprint being removed through GHG removals.

2.3. Council operations

The scale of the Council's operations can be defined as follows, with figures correct as of August 2022.

359 sites	600+ fleet vehicles
10,829 full time members of staff	Covering 423 km^2 of land
79% staff live in RCT	

2.4. RCTCBC recent progress

Energy efficiency and renewables

RCTCBC is strongly committed to understanding and reducing its carbon emissions, spending almost **£10 million on energy conservation projects since 2009**. As a result, all streetlights in RCT have been converted to LED or equivalent, saving 84% of the reported carbon; energy efficient lighting has been installed in over 805 council-owned buildings; 2MW of roof-mounted solar arrays have been installed on schools and corporate buildings; innovative hydrogen fuel cells have been installed in sites throughout RCT; and 100% of RCTCBC's electrical energy supply comes from renewable sources.

At Taff's Well Thermal Spring, two **heat pumps** have been installed to provide low carbon heat for the nearby Taff's Well Park Pavilion and local Ffynnon Taf Primary School.

In addition, so far, two viable **hydro schemes** have been identified and are currently being considered by the Climate Change Cabinet Sub-committee.

Transport

This year, the Council published its **Ultra Low Emissions Vehicles (ULEV) Transition Plan**, to outline the Council's plan to transition 293 fleet vehicles from Internal Combustion Engine (ICE) to Ultra Low Emissions Vehicles (ULEV) over the next six years. This report sits alongside a fleet review, grey fleet review, and EV charging infrastructure report, all of which were produced for RCTCBC by the Welsh Government Energy Service.

A pilot has been introduced in the **social care sector** to transition to a fleet of electric vehicles.

Furthermore, RCTCBC is currently trialling the use of **hydrotreated vegetable oil** (HVO), sometimes known as renewable diesel, for their fleet. A report will be developed in due course to summarise the findings.

Procurement of goods and services

In order to **decarbonise the Council's supply chain**, RCTCBC's standard procurement documents have been updated to reflect the increased interest in reporting emissions and standard sustainability questions are now asked during all tender exercises.

The **Contract Strategy** template document (which gets populated prior to any work taking place) has also been updated and will require each service area that wishes to procure goods or services to show that the carbon impact of their purchase has been considered.

RCTCBC are developing a first-of-its-kind, simple **toolkit for suppliers** to report the carbon footprint of their goods and services, which has garnered much interest from the Welsh Local Government Association, Business Wales and the Welsh Government. In the meantime, the Welsh Government's Sustainable Risk Assessment Toolkit will be used for upcoming Transport and Social Care contracts.

Land use, tree planting and nature

The RCT county borough has one of the **highest percentages of tree coverage** in Great Britain.

RCTCBC are delivering both **tree planting** in rural and urban areas, and **natural tree regeneration** to increase carbon sequestration, among other co-benefits, in the county. In 2022, the Council spent £100,000 on tree planting, which is due to increase this year.

An **audit** is being undertaken to understand the speed of natural regeneration based on a 2009 baseline. It will only include patches of land over 10 hectares, in line with the Welsh Government Net Zero Reporting requirements. This also sets the threshold to define 'woodland' as land with over 20% tree coverage.

A **study of peatland conditions** is also ongoing, supported by a grant from Natural Resource Wales awarded in September 2022, to analyse the potential for peatland restoration. This includes a feasibility project at Cwmparc, to be complete in 2023. To raise **public awareness** of the Council's natural resources, RCTCBC has produced webpages including, Let's Talk Trees, Let's Talk Nature, and Let's Talk Wildflowers.

2.5. Carbon footprint and baseline

The baseline year for the Council is the financial year 2019/20; this aligns with the Welsh Government's initial commitment to a net zero public sector, and the first year of Net Zero Reporting. The carbon footprint has been separated into Operational emissions (Scope 1-3 directly controlled), Supply Chain impacts (indirectly controlled), and Land Use & Renewables contributions (GHG removal and avoided emissions).

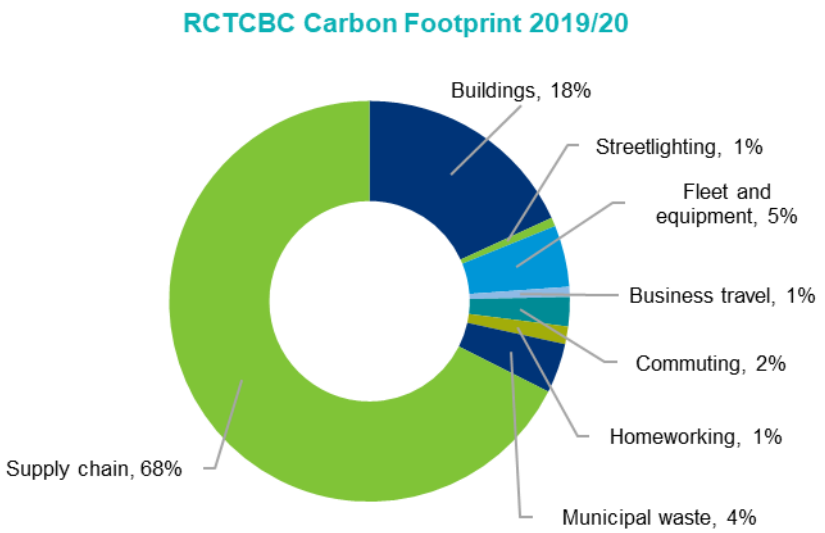
RCTCBC's baseline carbon footprint for 2019/20 was 125,702 tCO_2e. Considering REGO certified electricity, exported renewables and land-based sequestration (9,180 tCO_2e), the net emissions were 113,721 tCO_2e.

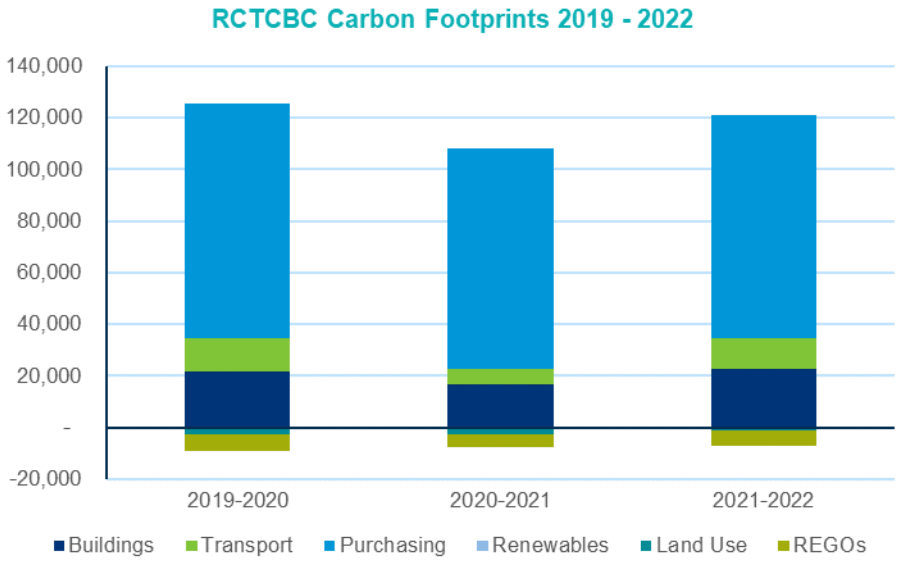
Operational emissions represent 31% of RCTCBC's total emissions with 17% of the footprint arising from emissions from building use (primarily gas and electricity) and 10% of the footprint arising from emissions from transport.

Emissions from the supply chain account for 69% of the total footprint. Emissions from procured goods and services have been calculated using economic proxy factors to calculate emissions based on spend data. This is a highly estimated approach and there is a need to engage suppliers and increase the accuracy of future supply chain emission accounting.

Emissions for the previous two reporting years are shown alongside the baseline. Retrospective adjustments have been made to the baseline year and 2020/21 to account for homeworking and staff commuting which was added to the scope of Net Zero Reporting in 2022.

Further details on the carbon footprints can be found online and in the Welsh Government Public Sector Net Zero Reporting.





3. Action Plan

This section of the Strategy forms the 'Action Plan' for RCTCBC. This forms the basis of a live document which will be reviewed and updated as actions are achieved and stages completed. The Action Plan includes:

- overarching strategic aims for each theme;
- near-term actions to the end of 2024/25; and,
- longer-term ambitions to 2030.

The carbon impact in 2030 uses the Future Energy Scenario's Falling Short pathway for the carbon intensity of the electricity grid, a conservative pathway for emissions modelling.

An asterisk next to an action indicates that it was inspired by, or drawn directly from, RCTCBC's Think Climate strategy: *Making Rhondda Cynon Taf Carbon Neutral by 2030*. For the exact page reference, see Appendix 4.

The Action Plan is structured into the three emission pathway areas and their main related themes. Initiatives have been codified within the Action Plan table, and broadly prioritised over the next three years. The table shows the structure of the Action Plan initiatives, and an outline estimate of timescales.

* Note that highlighted initiatives and commitments are linked back to **Climate Change Strategy 'Think Climate RCT'**

		2023	2024	2025
OPERATIONAL	**Buildings**	B2 B6	B3 B13	B1 B4 B5 B7 B8 B9 B10 B11 B12
	Transport		T6	T1 T2 T2 T3 T4 T7 T8 T9 T10
SUPPLY CHAIN	**Goods & Services**	S1 S2 S3 S4 S6 S7	S5 S8	S9 S10
LAND USE & RENEWABLES	**Sequestration**	L1 L4 L8	L2 L5	L3 L6 L7 L9
	Renewables			R1 R2 R3 R4

3.1. Operational

Buildings

This emissions category includes all buildings owned by RCT Council, whether operated by the Council or leased to a third party. Building emissions arise from the use of heating fuels (natural gas and LPG), electricity, and water consumption. In the financial year 2021/22, emissions from buildings account for 18% of RCTCBC's total carbon footprint.

Aims:

1. Improve energy efficiency of all buildings
2. Maximise renewable energy generation and low carbon heating across the estate

Ambitions to 2030

- By 2030, all buildings will have an energy efficiency equivalent to DEC rating of B.
- By 2030, rooftop PV will be installed on all viable buildings.
- Further develop the use of hydrogen for fuel cells in Council buildings (and vehicles), as part of the hydrogen economy development. [* Think Climate, page 5]
- Work with third-sector organisations to ensure the sustainability of community facilities/venues in RCTCBC (EPC B by 2030), reduce the impact of rising energy prices and improve energy efficiency. This includes Council buildings leased to third-sector groups. [* Think Climate, page 16]
- Complete all new builds and refurbishments for the Council's building estate in line with net zero standards by 2030, through the Sustainable Communities for Learning programme where applicable, and aim for low carbon heating systems.

Actions out to March 2025

	Actions out to March 2025	Target delivery date (FY)	Accountable Officer/ Service Area (for delivering action)	Funding Source	2030 Carbon reduction
B1	Where appropriate, upgrade the remaining inefficient lighting to LED	2025	**Officer:** Director of Corporate Estates **Service Area:** Corporate Estates	Internal	405 tCO_2e
B2	Create a programme for low carbon heat projects, prioritising LPG-fired, failing and inefficient boilers, and leased buildings *	2023	**Officer:** Director of Corporate Estates **Service Area:** Corporate Estates	n/a	n/a
B3	Develop costed proposals for low carbon heat projects to install in 2023/24 as further funding becomes available. Focus on high carbon emitters and sites with existing underfloor heating *	2024	**Officer:** Director of Corporate Estates **Service Area:** Corporate Estates	n/a	n/a
B4	Install low carbon heat projects developed as a result of actions B2 and B3	2025	**Officer:** Director of Corporate Estates **Service Area:** Corporate Estates	Internal, UK	7,460 tCO_2e
B5	Write a policy outlining the 'whole building' approach to maximise energy efficiency – look at insulation improvements when carrying out other works, fabric first, following CIBSE AM17 best practice for heat pumps. This could form part of the Energy Management Strategy update, with the inclusion of a more specific policy to follow.	2025	**Officer:** Director of Corporate Estates **Service Area:** Corporate Estates	Internal	n/a

	Actions out to March 2025	Target delivery date (FY)	Accountable Officer/ Service Area (for delivering action)	Funding Source	2030 Carbon reduction
B6	Carry out rooftop solar PV screening for all viable remaining buildings, including leased buildings, and create a programme of works *	2023	**Officer:** Director of Corporate Estates **Service Area:** Corporate Estates	n/a	n/a
B7	Install roof mounted solar on viable buildings, including all schools *	2025	**Officer:** Director of Corporate Estates **Service Area:** Corporate Estates	Internal, Wales funding	216 tCO_2e
B8	Re-roofing projects to consider installing solar mounts on appropriately orientated roofs, ready for PV install at a later date	2025	**Officer:** Director of Corporate Estates **Service Area:** Corporate Estates	Internal	n/a
B9	Optimise property portfolio by reducing the number of Council-owned or leased buildings, as more staff move to hybrid working	2025	**Officer:** Director of Corporate Estates **Service Area:** Corporate Estates	Internal	2,128 tCO_2e
B10	Ensure 80% of the energy used at our Bryn Pica Materials Recycling Facility comes from renewable sources by 2025 *	2025	**Officer:** Director of Frontline Services **Service Area:** AMGEN	Internal	32 tCO_2e
B11	Work with third-sector organisations to ensure the sustainability of community facilities/venues in RCTCBC (EPC C by 2025) reduce the	2025	**Officer:** Director of Corporate Estates **Service Area:** Corporate Estates	Internal, Wales funding	n/a

	Actions out to March 2025	Target delivery date (FY)	Accountable Officer/ Service Area (for delivering action)	Funding Source	2030 Carbon reduction
	impact of rising energy prices and improve energy efficiency. This includes Council buildings leased to third-sector groups. *				
B12	Provide training for Building Managers – following on from the Energy Policy and previous guidance given to Building Managers	2025	**Officer:** Director of Corporate Estates **Service Area:** Corporate Estates	Internal	388 tCO_2e
B13	Provide specific training for staff on how to operate and work in their buildings efficiently	2024	**Officer:** Director of Corporate Estates **Service Area:** Corporate Estates	Internal	582 tCO_2e

Transport

As of August 2022, the Council operates over 600 vehicles from cars to refuse collection vehicles. Transport emissions arise from vehicles owned by RCT Council (also known as fleet vehicles), emissions arising from hired vehicles and business travel in staff own vehicles (grey fleet), as well as emissions from employee commuting. Transport emissions account for 8% of the Council's 2021/22 footprint.

Aims:

1. Increase the number of electric vehicles in the Council fleet
2. Increase journeys taken by public transport, bike or walking, or by electric vehicles

Ambitions out to 2030

- In line with Wales' target for public sector organisations, aim for all our vehicles to be ultra-low emissions vehicles by 2030. [* Think Climate, page 16]
- By 2030, we will ensure that over 50% of all journeys are taken by public transport, bike or walking, or, where this is not possible, using electric vehicles. [* Think Climate, page 9]
- Electric pool vehicles and charging points are to be available at all Council locations they are needed e.g. depots and main offices. [* Think Climate, page 9]
- Investigate the potential for incorporating hydrogen and biofuel vehicles into the Council's fleet as they come onto the market, for example, hydrogen Refuse Collection Vehicles. [* Think Climate, page 5]
- Ensure that the transport services we commission, including Home to School, are zero or low carbon where possible. [* Think Climate, page 10]

Actions (out to March 2025)

	Actions out to March 2025	Target delivery date (FY)	Accountable Officer/ Service Area (for delivering action)	Funding Source	2030 Carbon reduction
T1	Implement the Council's Electric Vehicle Charging Strategy and supporting Implementation Plan, which will accommodate the transport needs of existing and future electric vehicle users across the county borough *	2025	**Officer:** Director of Corporate Estates **Service Area:** Corporate Estates	Internal, UK	n/a
T2	In line with Wales' target for public sector organisations, aim for all our new cars and light goods vehicles to be ultra-low emissions vehicles by 2025 *	2025	**Officer:** Director of Frontline Services **Service Area:** Frontline Services	Internal, Wales funding	1,637 tCO_2e
T3	Implement the Council's Fleet Transition Plan including the promotion and prioritisation of electric vehicles, with appropriate training for staff	2025	**Officer:** Director of Frontline Services **Service Area:** Frontline Services	Internal	n/a
T4	Undertake further ULEV trials for different vehicle types e.g., refuse collection vehicles	2025	**Officer:** Director of Frontline Services **Service Area:** Frontline Services	Internal	n/a
T5	With the aim of achieving 25% of journeys on foot, bike or public transport by 2025, significantly reduce staff travel by car for commuting and business travel by continuing to maximise the use of technology for route planning and encouraging active travel and greater use of public transport *	2025	**Officer:** Director of Frontline Services **Service Area:** Frontline Services	Internal	949 tCO_2e

	Actions out to March 2025	Target delivery date (FY)	Accountable Officer/ Service Area (for delivering action)	Funding Source	2030 Carbon reduction
T6	Explore the potential for staff to walk / take public transport to social care visits by zoning patches of care, and not only employing those who can drive	2024	**Officer:** Director of Social Services **Service Area:** Social Care	Internal	n/a
T7	Encourage staff to commute by active travel and public transport. This can be achieved by opening the Cycle 2 Work scheme year-round and promoting it more heavily and installing enabling infrastructure like bike racks, showers and lockers.	2025	**Officer:** Director of Finance/ Director of Corporate Estates **Service Area:** Finance/ Corporate Estates	Internal, UK	n/a
T8	Incentivise low carbon transport with cycle/running clubs, friendly competition to promote active travel, apps e.g. Strava, on-road cycle training and buddying schemes. Use existing platforms like the staff Green Space on Microsoft Teams to promote progress and achievements.	2025	**Officer:** Director of Democratic Services/ Director of Human Resources **Service Area:** Democratic Services/ Human Resources	Internal	n/a
T9	Link the Safe Walking and Cycling Routes established by schools to Council staff and the wider community	2025	**Officer:** Director of Frontline Services **Service Area:** Frontline Services	n/a	n/a
T10	Provide training to educate frequent drivers on how to drive their own and fleet ICE (internal combustion engine) cars in a more fuel-efficient way	2025	**Officer:** Director of Frontline Services **Service Area:** Frontline Services	n/a	296 tCO_2e

3.2. Supply Chain

Goods, Services and Construction of capital assets

Supply chain emissions arise from all activities associated with the goods and services the Council purchases, and the construction of new capital assets like roads and buildings. These purchases contain 'embedded carbon' – the greenhouse gas emissions associated with the whole production process and life cycle of a product. This includes upstream activities like the extraction of raw materials, manufacturing and distribution of products, as well as downstream activities like the emissions associated with the use of a good or service and the end-of-life disposal of that product. When procuring goods and services, many factors, including the carbon footprint, price, value for money, social value and the local economy will be considered. At times, these factors conflict or compete with one another and need to be prioritised. In the financial year 2021/22, emissions from purchased goods and services account for 67% of RCTCBC's total carbon footprint.

Aims:

1. Improve carbon accounting for all purchased goods, services and construction
2. Seek to only procure supplies and services from businesses that are striving to reduce their carbon emissions and, in doing so, actively support low carbon and local suppliers as part of our wider transition to net zero, where the legal framework allows
3. Work with key suppliers to evaluate and reduce emissions from building and infrastructure projects

Ambitions out to 2030

- By 2026, 50% of our suppliers will be net zero certified
- Understand the carbon impact of all major purchasing decisions
- Proportion a score for tender responses based on suppliers' carbon footprints and reduction plans
- Accurately measure the carbon footprint of all purchased goods and services

Actions (out to March 2025)

	Actions out to March 2025	Target delivery date (FY)	Accountable Officer/ Service Area (for delivering action)	Funding Source
S1	Produce advice for suppliers outlining the options to achieve net zero certification, in line with RCTCBC's tender requirements, and distribute it to suppliers *	2023	**Officer:** Head of Procurement **Service Area:** Procurement	n/a
S2	All procurement lead contracts have already been revised to include questions about suppliers' ability to calculate their carbon emissions. Relevant contract clauses have also been added to strengthen the Council's position. Ensure these are rolled out in all upcoming contracts e.g., Supported Living and Home Care contracts, Transport contract	2023	**Officer:** Head of Procurement **Service Area:** Procurement	n/a
S3	Identify departments that procure goods and services with the highest carbon impact and prioritise supporting the procurement approach in upcoming contracts	2023	**Officer:** Head of Procurement **Service Area:** Procurement	n/a
S4	Request all contracted suppliers complete the carbon footprint tool annually, and support them to do so by developing training	2023	**Officer:** Head of Procurement **Service Area:** Procurement	n/a
S5	Support smaller suppliers to use the carbon footprint tool to assist them in decarbonising their activities	2024	**Officer:** Head of Procurement **Service Area:** Procurement	n/a

	Actions out to March 2025	Target delivery date (FY)	Accountable Officer/ Service Area (for delivering action)	Funding Source
S6	Where market conditions allow, specify low carbon travel/ vehicles for those contracts where transport is a large contributor e.g., delivery services, transport services (Stagecoach etc), social care services, school transport	2023	**Officer:** Head of Procurement **Service Area:** Procurement	Internal
S7	Establish ambitious energy efficiency standards, that go beyond the minimum mandatory Government Buying Standards, when purchasing white goods, appliances and ICT equipment and share with all staff across the Council	2023	**Officer:** Head of Procurement **Service Area:** Procurement	n/a
S8	Using WRAP guidelines for measuring emissions from food and drink, calculate an accurate carbon footprint for food provided by the Council using higher resolution specific emissions factors	2024	**Officer:** Director of Education/ Head of Procurement **Service Area:** Education/ Procurement	Internal
S9	Establish priorities for increasing the number of climate friendly meal options offered by the Council in our schools, care homes, and offices, as well as our community meals service from a baseline that will be established in 2023/24 *	2025	**Officer:** Director of Education/ Head of Procurement **Service Area:** Education/ Procurement	Internal
S10	When demolishing or refurbishing sites, review the options to reuse materials where practicable e.g., timber.	2025	**Officer:** Head of Procurement/ Director of Corporate Estates **Service Area:** Procurement/ Corporate Estates	Internal

3.3. Land use and renewables

RCTCBC's use of land can have an impact on climate change mitigation and adaptation in multiple ways, including carbon sequestration, building resilience to extreme weather like natural flood defences, and development of renewables. Fire risk is also projected to increase with climate change, which impacts slope stability, loss of stored carbon in soil and plants, biodiversity loss, air quality, water retention, erosion potential, tourism, and regeneration, as well as potential loss of life and property. Land management can help to mitigate some of these impacts.

Land sequestration

Land can be used to store carbon through rewilding, tree planting or peat bog restoration, for example. Through these activities, carbon dioxide is naturally captured from the atmosphere, reducing the rate of global heating. The deep peat in Britain stores approximately 4.5 million tonnes of carbon (compared to 162 thousand tonnes stored by British forests). Tree planting can also provide natural flood defences which will be essential, especially in Wales where warmer, wetter winters are projected to increase the frequency and severity of flooding events as the planet warms. In the financial year 2021/22, net emissions sequestered from RCTCBC's land amounted to the equivalent of 1% of the total carbon footprint.

Aims:

1. Assess the condition of peatlands across RCT and rewet where required to improve the quality of land
2. Encourage natural regeneration and increase afforestation of woodland and hedgerows

Ambitions out to 2030

- Maximise carbon sequestration across Council-owned land.
- Engage with Welsh Government and Natural Resources Wales regarding the management of the Welsh Government estate to restore peat, reduce carbon emissions and maximise flood and fire risk management.
- Rewet and appropriately manage peatbogs in Council ownership to restore biodiversity and maximise carbon sequestration.
- Where appropriate, use planning conditions to deliver habitat protection and restoration as part of new developments. Engage developers through Supplementary Planning Guidance for environmentally friendlier design, which incorporates and enhances the natural features existing on greenfield sites.

- Encourage new and better management of S106 sites with long term management goals in mind, protecting existing trees, hedges and green spaces.
- Contribute to the Queen's Green Canopy initiative and the National Forest for Wales through sustainable tree planting by investing £200,000 per annum until 2030.
- Attract private sector investment to increase areas of woodland regeneration and creation, and soil and habitat conservation through restoration and management, ensuring that we protect and store carbon and reduce the risk of flooding.

Actions (out to March 2025)

	Actions out to March 2025	Target delivery date (FY)	Accountable Officer/ Service Area (for delivering action)	Funding Source
L1	Understand the sequestration potential of land in our ownership *	2023	**Officer:** Director of Prosperity & Development **Service Area:** Prosperity & Development	Internal, Wales
L2	Identify an accurate baseline of RCT woodland cover to inform future management by: - Producing a whole RCT woodland cover map by 2024, including identification of all Council-owned woodland - Identifying the rate of natural woodland regeneration on Council-owned woodland sites over 10 hectares in size *	2024	**Officer:** Director of Prosperity & Development **Service Area:** Prosperity & Development	Internal, Wales
L3	By 2025, set a target for sustainably increasing woodland cover through The Natural Tree Regeneration Project *	2025	**Officer:** Director of Prosperity & Development	n/a

	Actions out to March 2025	Target delivery date (FY)	Accountable Officer/ Service Area (for delivering action)	Funding Source
			Service Area: Prosperity & Development	
L4	Utilise RCTCBC's Tree and Woodland Strategy to inform future land management operations including tree planning, management and monitoring	2023	**Officer:** Director of Prosperity & Development **Service Area:** Prosperity & Development	n/a
L5	Work with partners to map and review Council-owned land to identify categories that align with the Net Zero Reporting commitment *	2024	**Officer:** Director of Prosperity & Development **Service Area:** Prosperity & Development	Internal, Wales, UK
L6	Utilise land category map (L5) to produce a long-term plan to optimise diverse land management, including identifying sites for natural woodland regeneration, sites suitable for food production, sites for peatland restoration, and sites where tree planting is appropriate	2025	**Officer:** Director of Prosperity & Development **Service Area:** Prosperity & Development	Internal, Wales, UK
L7	Put climate change at the centre of our Local Development Plan, which is currently being renewed. This includes protecting RCT uplands, important habitats and peatbogs. *	2025	**Officer:** Director of Prosperity & Development	n/a

	Actions out to March 2025	Target delivery date (FY)	Accountable Officer/ Service Area (for delivering action)	Funding Source
			Service Area: Prosperity & Development	
L8	Encourage community gardening programmes, growing food locally, and the potential for recruiting adults with complex needs to work in the community gardens and paying them a fair wage. Explore the suitability of parks and other Council land to support this.	2023	**Officer:** Director of Prosperity & Development / Director of Social Care **Service Area:** Prosperity & Development / Social Care	Internal, Wales
L9	Introduce land use policies to mitigate fire risk e.g., Health Hillsides Project / conservation grazing, joint working with the Fire Service, Natural Resources Wales, and Wildlife Trust. Extend lessons from the pilot to other Council-owned/ leased sites, as well as NRW/ Welsh Government-owned/ leased sites and private sites in RCT.	2025	**Officer:** Director of Prosperity & Development/ Director of Social Care **Service Area:** Prosperity and Development/ Social Care	Internal, Wales

Renewables

Setting land aside for new development of renewable energy sources like solar and wind farms will provide green energy to RCT residents and contribute to the Council's net zero targets. Community ownership of renewables can also provide income or reduced energy rates for local communities and increase local buy-in for new renewable developments. In the financial year 2021/22, electricity generated from solar PV avoided emissions equivalent to 0.3% of the total carbon footprint.

Aims:

1. Use public sector land for green energy generation. Progress solar, wind and hydroelectric energy schemes to reduce the cost of meeting our energy needs and generate income, whilst reducing our carbon footprint

Ambitions out to 2030

- Increase local renewable energy generated from Council land and buildings from the 2021/22 baseline (2MW) to 20MW by 2025 (this also includes roof mounted solar PV)
- By 2027, install two 5MW land based solar farms.
- By 2028, install a 6MW wind turbine scheme.
- Work with partners including a local health board, Natural Resources Wales, and neighbouring authorities to maximise the collective resources to generate green energy across the region

Actions (out to March 2025)

	Actions out to March 2025	Target delivery date (FY)	Accountable Officer/ Service Area (for delivering action)	Funding Source	2030 Carbon reduction
R1	Increase renewable energy generated from Council land or buildings from 2021/22 baseline (2MW) to 20MW by 2025 *	2025	**Officer:** Director of Corporate Estates **Service Area:** Corporate Estates	Internal, Wales, UK	3,143 tCO_2e
R2	Install 200kW solar scheme at Bryn Pica, as per B10	2025	**Officer:** Director of Frontline Services **Service Area:** AMGEN Cymru	Internal, Wales, UK	32 tCO_2e
R3	Explore community cooperative energy projects to provide inexpensive, green energy for residents and businesses to purchase, including energy for electric vehicle recharging on publicly owned land *	2025	**Officer:** Director of Corporate Estates **Service Area:** Corporate Estates	Internal, Wales, UK	n/a
R4	Explore potential options to utilise existing energy sources including: - Geothermal energy from abandoned coal mines - Hydroelectric projects *	2025	**Officer:** Director of Corporate Estates **Service Area:** Corporate Estates	Internal, Wales, UK	n/a

4. Net zero target

4.1. Future Energy Scenarios

The carbon intensity of grid electricity has been falling due to the removal of coal-fired power stations, with the ramping up of renewable energy generation feeding into the grid further lowering carbon intensity. In the past decade, CO_2 intensity has dropped by 65% from 529 gCO_2/kWh in 2013 to 188 gCO_2/kWh in 2021.

The National Grid ESO Future Energy Scenarios (FES 2022) outline four different forecasts for the future of energy between now and 2050.

The Falling Short scenario assumes non-compliance with the UK Net Zero 2050 emissions target, due to low levels of decarbonisation and societal change. Whereas the Leading the Way scenario has very high levels of decarbonisation and societal change for the “fastest credible” decarbonisation pathway for UK net zero to be met by 2047.

RCTCBC have modelled the carbon impacts of the Action Plan using the Falling Short FES 2022 scenario; this provides a conservative assessment of future emissions.

4.2. Pathways

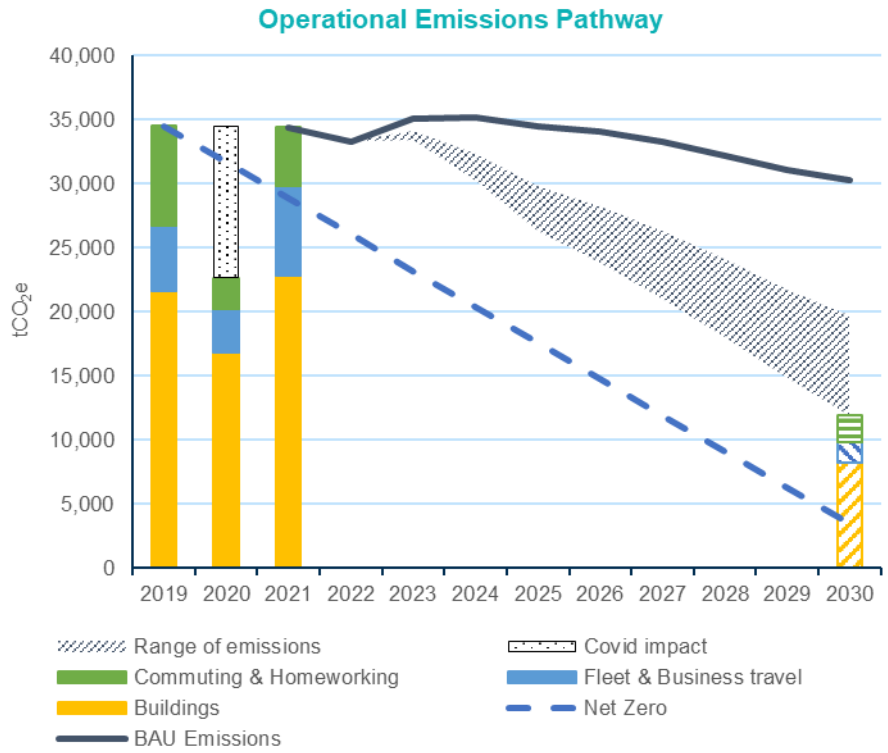
The Council’s carbon emissions have been split into Operational emissions (Scope 1-3 directly controlled), Supply Chain impacts (indirectly controlled), and Land Use & Renewables contributions (sequestration and avoidance of carbon – dual reporting method).

Using the baseline 2019/20 carbon footprint, applying the grid decarbonisation scenario forms the basis of the ‘Business as Usual’ pathway. A likely pathway range has been modelled using high and low estimated carbon reductions from the Action Plan initiatives.

Actual footprint data from 2019/20, 2020/21 and 2021/22 has been used to show progress since the baseline year. Target pathways have been taken from the baseline year and extend to 2030 as stated by Welsh Government.

Using the Science Based Target initiative methodology, the minimum mitigation target for net zero is shown at a 90% reduction on the 2019/20 baseline.

Operational emissions forecast



RCTCBC operational emissions	2025	2030
Expected pathway	26,354 tCO_2e	11,949 tCO_2e
Net zero target pathway	17,578 tCO_2e	3,453 tCO_2e

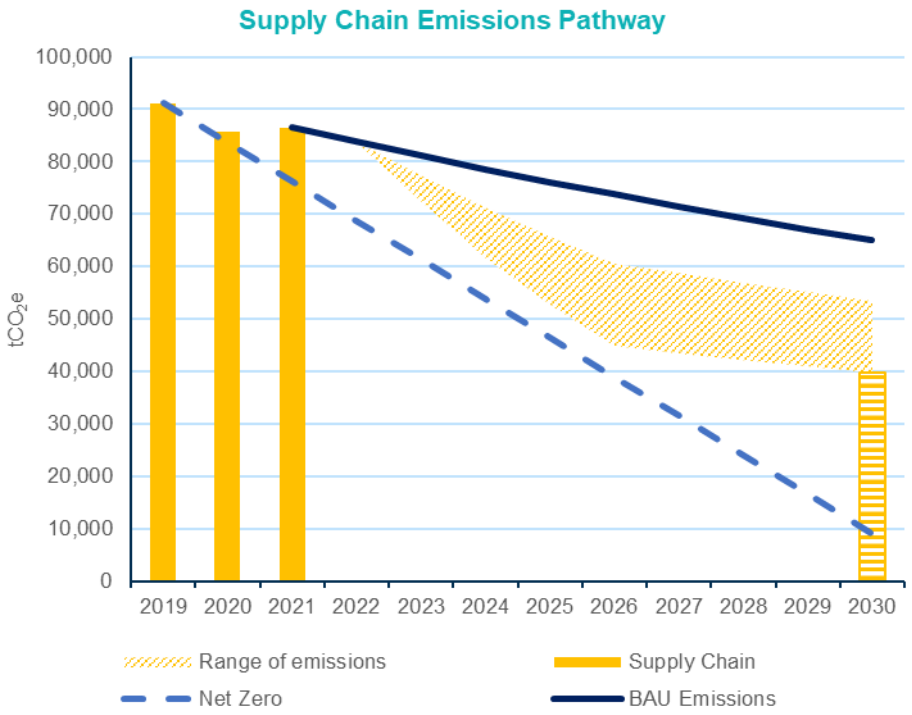
The operational emissions pathway is broken down into three summary areas:

Buildings	Emissions from electricity, gas, LPG, water use and wastewater treatment for all buildings owned and leased by RCTCBC.
Fleet & Business travel	Emissions from the Council's fleet and equipment (inc. light vans and refuse collection vehicles), hired vehicles, and staff own vehicles used for business travel (grey fleet).
Commuting & Homeworking	Emissions from staff commuting to their place of work and homeworking.

The pathway shows:

- Business As Usual (BAU) shows a reduction due only to the decarbonisation of the electricity grid
- The impact of Covid shows the assumed emissions level if no pandemic
- The range of emissions in grey gives an indication of the emissions reduction due to grid decarbonisation, measures underway in 2022/23 and actions planned to 2030
- Expected residual emissions 2030 are estimated as 11,949 tCO_2e
- The net zero target is forecast to not be met with the range of actions in the Action Plan at this stage - this demonstrates the need to maximise delivery, and develop further opportunities to bridge the gap

Supply Chain emissions forecast



RCTCBC supply chain emissions	2025	2030
Expected pathway	52,808 tCO_2e	39,759 tCO_2e
Net zero target pathway	46,416 tCO_2e	9,117 tCO_2e

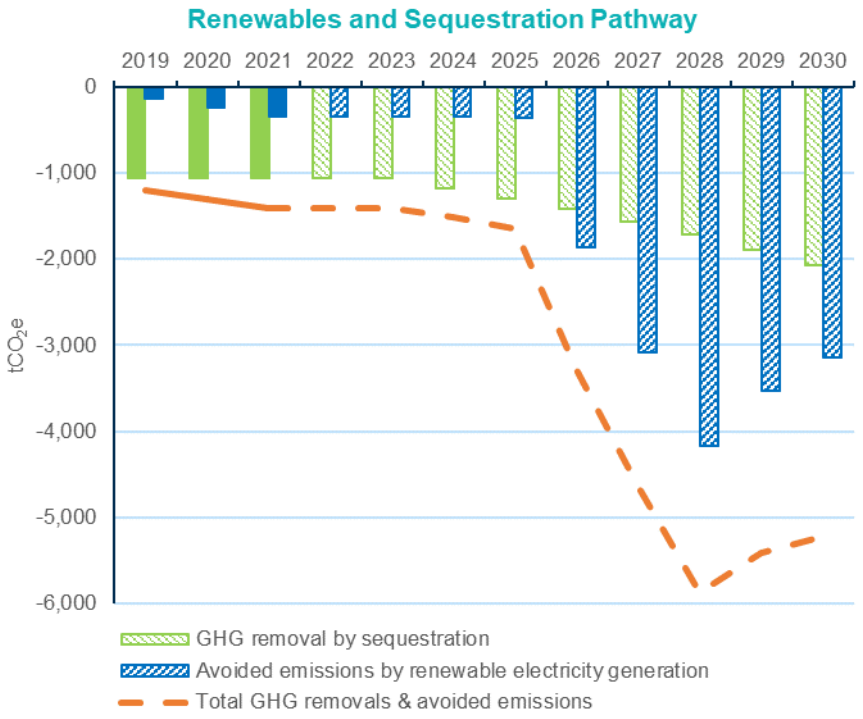
Supply chain emissions are summarised as:

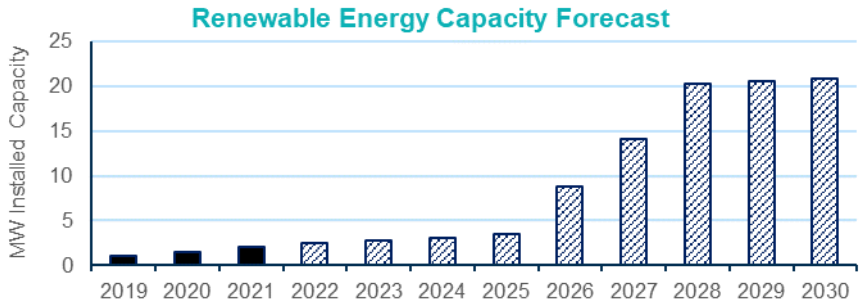
Supply chain	Emissions from the supply chain are based on the goods/service emissions factor multiplied by the value of purchases made.

The pathway shows:

- Business as usual shows a reduction due to the estimated impacts of decarbonisation of the supply chain against financial values due to financial inflation and global supply chain decarbonisation
- Emissions can't be accurately calculated due to the way emissions factors are based on spend, which will be influenced by inflation and a rise in material costs
- The plan is to shift to market-based accounting and work with suppliers to produce actual carbon emissions for the goods and services supplied to the Council
- Large contracts and areas of spending such as capital programmes, infrastructure projects and social care could be split out, based on previous supply chain work, to track progress in these areas
- The estimated pathway shows emissions in 2030 as 39,759 tCO_2e, this is significantly above a 90% reduction target, however, there is a need for the baseline and modelling approach to evolve

Land Use & Renewables forecast





Land use and renewable emissions are summarised as:

GHG removals	Emissions sequestered through good land management e.g., naturally regenerated woodland, increased tree coverage, managed woodlands, peatland restoration
Avoided emissions from renewables	Emissions avoided by using renewable energy from solar, wind and hydroelectric generation

The pathway shows:

- The 20MW target for generation capacity is shown as in 2028
- Renewables are stepped to show the phasing of projects – 5MW solar in 2026 and 2027, and 6MW wind in 2028
- Renewable electricity generation has been calculated at the annual grid emissions intensity factor moving forward. Due to the increase in renewables on the national grid, this factor will decrease with time.
- Emissions removed through good land management are assumed to increase incrementally annually
- Renewable Energy Generation Obligation credits (REGOs) are purchased to offset the electricity used by the Council. Since electricity emissions will decrease due to the planned initiatives (including renewables) as well as grid decarbonisation, the quantity of REGOs required to be purchased will decrease.
- Annual GHG emissions reduction estimated in 2030 are -5,220tCO_2e

4.3. 2025 / 2030 expected pathway

The emissions pathways set the expected operational, supply chain and avoided emissions as follows. Where there is an emissions pathway 'range' – the higher scale of delivery / intervention has been used. For both 2025 and 2030, the expected pathway is above the net zero target line.

RCTCBC emission pathway	2025	2030
Operational emissions	26,354 tCO_2e	11,949 tCO_2e
Supply chain emissions	52,808 tCO_2e	39,759 tCO_2e
Total GHG removals and avoided emissions	-1,644 tCO_2e	-5,220 tCO_2e

4.4. Total Emissions in 2030

In 2030:

- The operational emission pathway estimates 11,949 tCO_2e residual emissions – **this does not meet the 90% mitigation target of 3,453tCO_2e**; this demonstrated the challenge to meet net zero and the need to do more to bridge the gap
- The supply chain will be engaged and able to accurately report on their emissions contributions – this will allow the supply chain emissions pathway and target to be updated
- Renewable energy generation capacity is targeted to be over 20MW
- GHG removal measures will be reaching maturity to recognise the benefit to offset residual emissions

4.5. Offsetting

Options for offsetting remaining emissions should only be considered when emissions have been reduced as far as possible. The 90% minimum mitigation target set by the SBTi means that a maximum of 10% of the original baseline emissions may need to be offset.

The practice of offsetting is commonly considered as purchasing of carbon credits in sufficient quantity to offset residual emissions. Accreditation bodies and standards exist (such as The Gold Standard organisation) to verify carbon credits. Often these are for projects in other countries, involving afforestation and social value programmes promoting clean cooking fuels etc.

Increasingly, buying credits from the voluntary offset market is viewed as unsuitable, and has been used as a way to 'pay your way' towards net zero. Welsh Government are yet to set expectations for a suitable offset approach for the Welsh public sector net zero ambition. In the meantime, the Council will seek to progress local GHG removal projects which will have a high level of assurance and can be tracked to maturity.

4.6. Adaptation to climate change

Significant decarbonisation efforts are required to avoid the most severe effects of climate change. There is already a certain amount of global heating that is inevitable due to existing carbon emissions in the atmosphere. To date, average global temperatures have increased by over

1˚C since pre-industrial levels and will continue to rise in future. Decarbonisation will limit the rise in temperatures but not eliminate it.

Along with rising temperatures, milder, wetter winters in Wales will increase the frequency of severe flooding, and hotter summers may affect food production, and create health risks from overheating. An increase in extreme weather events overseas will also create supply chain disruptions for Welsh consumers. A full outline of climate change predictions for the UK can be found in the **UK Climate Projections**.

To this end, the Council needs to account for the projected changes in climate in its future planning and build resilience to the increasing risks. Existing plans for decarbonisation may already benefit adaptation. For example, RCTCBC's tree planting commitments are likely to create flood defences if the right trees are planted near coastal or fluvial areas.

In 2019, the Welsh Government published their climate change adaptation plan for Wales, **Prosperity for All: A Climate Conscious Wales**. It sets a vision for 2030 where 'Wales is a country which has the resources and is prepared, has the knowledge to understand the risk and challenges ahead and has the capacity to adapt to the impact of climate change'. The document also highlights areas for action including flood risk and sea level rise; risks to business, buildings and infrastructure; agriculture and forestry; and health and wellbeing. The government has outlined over 30 commitments to adapt to the changing climate and achieve its vision for Wales.

When planning for the future, RCTCBC needs to take into consideration climate projections for Wales, and similar strategies to those outlined in the Welsh Government's adaptation plan.

5. Enablers and resources

5.1. Enablers

RCTCBC are dependent on others such as UK / Welsh Government and Distribution Network Operators to support many of the initiatives outlined. This reliance may hold up delivery, or present barriers such as access to funding or availability of grid connections. The Council must work collaboratively to overcome these challenges in order to recognise net zero.

UK National and Welsh Government policies

The **Future Homes Standard** states that no new gas boilers will be allowed for new build residential properties from 2025. There is a consultation on the date to ban sales of new gas boilers but this could be from 2035.

The UK Government has put in place legislation banning new non-electric car sales from 2030, new hybrid car sales from 2035 and new CO_2 emitting lorry and bus sales from 2040.

The Minimum Energy Efficiency Standards currently state that leased buildings must be EPC rating E or above. It is expected that the UK Government plan to improve this to EPC C by 2027, and EPC B by 2030.

Electricity network capacity

The local Distribution Network Operator has confirmed that currently there is not the available capacity for the grid to accept large scale renewable generation at most primary supply points across RCT County Borough. This hinders the development of large-scale wind and solar arrays, as the costs to upgrade the network are prohibitive for the scale of the projects the Council would like.

There is available capacity across most of the county to increase demand on the network for EV charge points and heat pumps.

Cabinet members need to escalate grid challenges further to the DNO and Welsh Government to lobby for upgrades to support the Council's projects. The request must be for DNOs to work with local authorities to enable large scale renewable generation and electrification of vehicles and heating. This process is already under way and RCTCBC will keep in contact with the DNO to understand when any changes may occur.

Micro / mini electricity networks

RCTCBC are investigating the feasibility of micro and mini off-grid electricity networks for individual villages, using renewable energy sources and battery storage as the basis of the energy generation. Whilst more applicable to the county borough, some council buildings may benefit from these mini networks.

Decarbonisation of the gas network

If we are not able to exchange all gas fired boilers for heat pumps before 2030, we will be reliant on the emissions factor of the main natural gas network. This is not predicted to reduce as the mix of natural gas in the network is fixed. Welsh Government are investigating options to change the mix of gas in the existing network to include a proportion of hydrogen, which would reduce the emissions factor of mains gas. Wales & West Utilities has set out how it will meet the Government's target for gas pipes to be ready to deliver up to 20% hydrogen to homes and businesses around the country

from 2023, as a replacement for up to a fifth of the natural gas currently used.

Hydrogen

Because of local scoping work into hydrogen, and the use of hydrogen fuel cells to power some council buildings, the Council are keen to investigate the potential for hydrogen as a fuel source for buildings and vehicles. The UK government has continued to include hydrogen as a potential low carbon fuel, and small trials are taking place across the UK. However, clean generation of green hydrogen (rather than blue hydrogen produced from natural gas) would be required to make this a truly low carbon fuel. The wide scale roll out of hydrogen for heating buildings and powering vehicles is not expected to be possible before 2030.

5.2. Resources

Sources of finance

Implementing the necessary measures to reach the council's net zero target may be expensive, so it is essential to have a plan in place to finance the decarbonisation initiatives.

The Welsh Government has various funding mechanisms available to help support the public sector to decarbonise. For example, the **Wales Funding Programme** (administered by Salix Finance), provides interest-free loans for public sector bodies.

The **Public Works Loan Board** (PWLB) provides loans to local authorities for capital projects, often with interest rates below those of other schemes. While the members of the PWLB (the Public Works Loans Commissioners) were abolished in 2020, the PWLB is still available, and managed through the UK Debt Management Office, on behalf of HM Treasury.

The Council is benefitting from income from the **Feed-In Tariffs** (FITs), selling electricity to the grid that is generated by council-owned renewable energy developments, primarily roof mounted solar PV. FITs provide an above-market price for electricity delivered to the grid to promote investment in renewable electricity. In FY 2021/22, RCTCBC received over £122 thousand from FITs payments. The FITs scheme is now closed to new entrants, but some newer PV systems are registered for the Smart Export Guarantee (SEG) payments, if they produce surplus electricity.

In 2022, RCTCBC secured funding via the **Peatlands Development Grant**, launched by Natural Resources Wales, to enable the development of costed restoration projects of Council-owned peatland. The funding has enabled RCTCBC to identify a significant Council-owned peatland as a potential site for future restoration works to maximise its environmental impact.

Funding for electric vehicles through the **Plug-in grant for cars** is nearing the end as the Government's focus moves to improving electric vehicle charging by expanding the public chargepoint network. As electric taxis, vans, trucks, motorcycles and wheelchair accessible vehicles become available, funding may be available for RCT through **Welsh Government's EV grants**.

For FY 2022/23, RCTCBC received an EV Infrastructure Grant of £300k from the Welsh Local Government Association to facilitate fleet charging. In addition to this, RCTCBC have secured both capital and revenue funding as part of the **ULEV Transformation Fund**, to facilitate the development of public, staff and visitor electric vehicle charging at key Council sites across the County Borough.

Alternatively, the **Workplace Charging Scheme** (WCS), run by the Office for Zero Emission Vehicles (OZEV), is available for public sector organisations across the UK, providing up to 75% of the cost of purchase and installation of electric vehicle chargers.

The **On-Street Residential Chargepoint Scheme (ORCS)** is available to UK local authorities and provides funding towards the capital costs of installing public charging infrastructure for residents without private parking. It supports installations both on-street and in local authority-owned residential car parks.

The **Renewable Heat Incentive** (RHI), which provided funding for renewable heat technologies for homes, businesses, public sector and non-profit organisations, is no longer available. The non-domestic RHI scheme closed to new applicants in 2021, followed by the domestic scheme in March 2022. RCTCBC still have one application registered for the RHI scheme – Taff's Well Thermal Spring Project.

In place of the RHI for smaller schemes the **Boiler Upgrade Scheme** was launched in Spring of 2022 and will run until 2025. The scheme provides funding for domestic and small non-domestic properties in England and Wales for heat pumps and biomass boilers. The grants are not available for social housing but may be applicable to some of the Council's smaller buildings.

The Welsh Government, through the Energy Service, is aiming to stimulate the uptake of heat pumps by providing the **Low Carbon Heat Development Grant** (Sept 2022). RCTCBC successfully secured funding from this grant in December 2022 to support the development to RIBA Stage 3 for the design of low carbon heat solutions at several Council buildings.

The **Sustainable Communities for Learning** programme (previously **21st Century Schools**) is a collaboration between the Welsh Government and local councils in Wales. It is a significant, long-term and strategic capital investment programme with the aim of creating a generation of 21st Century Schools in Wales, improving amongst other goals, the energy efficiency of buildings used for schools.

Existing maintenance budgets could also be used for some of the energy efficiency works proposed, bringing forward the timing of spend to allow savings to be seen quicker going forwards. RCTCBC has their **own Invest to Save scheme** where money saved through lower running costs is reinvested in new energy efficiency schemes, and a budget for **Carbon Reduction Programme** works. Since 2009, RCTCBC have invested almost £10.5 million in their Carbon Reduction Programme, equating to emissions savings of almost 6,000 tCO_2e.

Local community groups could be another source of funding for projects run jointly with the council and local groups. This would also help RCT contribute to Welsh Government's aim for locally owned renewable energy schemes.

Implementation and Routes to market – procurement, frameworks

With many of the specific low carbon technologies, there are particular procurement frameworks available to allow the council to find the best providers for the projects.

Energy Services Companies and frameworks such as Re:fit are another way to procure a service instead of project managing the purchase and installation of several technologies.

Staff training and engagement

RCTCBC is working to develop staff awareness, knowledge, skills and expertise in climate change and carbon reduction, to enable the Council to meet its targets and respond to the Welsh Government's declared Climate and Nature emergencies. The Council is leading by example in encouraging staff to develop low carbon behaviours.

Via its **online platforms**, the Council already produces regular content to engage and inform RCT county borough residents of recent developments in the council's environmental strategy. RCTCBC has effective communications platforms like the **'Let's Talk'** website which allows members of the public to share their thoughts and ideas on RCT's climate change strategies and the online **'Newsroom'** with recent events in the local authority. The dedicated **climate change page** on its website has a countdown to 2030, outlining the innovations taking place in RCT to tackle climate change.

Within the council, many schemes are already in place to engage with staff on environmental issues. For instance, the **'Green Space'** channels on Microsoft Teams provide a collaborative platform for a staff forum on a variety of sustainability-related topics. RCTCBC has also hosted virtual **net zero events** on subjects including the workplace, lifestyle, and commuting.

Council staff from all departments and levels of seniority may also be members of the **Climate Change Working Group** (CCWG) and subgroups. The aim of these groups is to ensure that the council is meeting its targets to reduce its environmental impact. The subgroups, which meet every two months, tackle areas such as communications and engagement, youth participation, and the food system.

Training on environmental topics is being developed to engage staff throughout their employment. First, new starters will have a presentation as part of their induction to provide a general overview and to show the council's commitment to tackling climate and nature emergencies. Following the induction video, a **climate change e-learning package** developed with assistance from Cynnal Cymru is due to be piloted in 2023.

Finally, the **climate change engagement plan** currently in development outlines initiatives to further improve staff engagement and promote environmentally responsible behaviour both within the council workforce and the wider resident population. This includes regular themed newsletters, competitions (e.g., Organic September), promotions on the staff intranet, and friendly challenges.

The Council are continuously developing a **Carbon Footprint Dashboard** to measure council performance against metrics which are aligned to Welsh Government Net Zero Reporting. The dashboard visualises the route to net zero with a line graph and will be available on the intranet for council employees to view.

The council has also implemented initiatives like the '**Green Car Scheme'** and '**Cycle 2 Work**' which will help to reduce financial barriers for staff in reducing their personal carbon footprints and making more environmental choices. These initiatives can be supported by installing enabling infrastructure like chargers, bike storage and changing facilities at council sites.

One area identified for improvement is increasing the involvement of managers and councillors with staff engagement activities. For council staff, having **visible senior buy-in** adds credibility and momentum to the council's commitments. Highlighting the financial benefits of decarbonisation and the political benefits of being seen to take decisive

action on climate change could be ways to increase the engagement of more senior decision-makers and councillors.

6. Governance approach

6.1. Management and responsibility

Ongoing delivery of the strategy, management and updating of the Action Plan, and monitoring, reporting and evaluation of impacts are key to achieving the net zero ambitions for the Council.

Roles and responsibilities

As referenced in the Climate Change Strategy and our Business Plan, decarbonisation is a hugely important area of focus. As such, the Chief Executive will take ultimate responsibility for the organisation's approach to decarbonisation.

The **Chief Executive** will be responsible for putting in place suitable roles and responsibilities to ensure that decarbonisation is managed and considered throughout the organisation, and that suppliers to the Council are working towards decarbonising their own operations.

The **Climate Change Cabinet Member** will have executive responsibility for reporting carbon emissions to Welsh Government. The **Climate Change Cabinet Sub-Committee** will sit under this role and develop actions to reduce carbon emissions.

The **Director of Finance and Digital Services** will be responsible for allocating and managing project finances in relation to low carbon heating, energy efficiency, ultra-low emission vehicles, renewables and related projects.

The **Procurement team** has an essential role in helping the Council decarbonise the purchasing of goods and services. Whilst not directly involved in all purchases, the Procurement team set the Council policy for all departments to follow in dealings with suppliers.

The **Director of Human Resources** will take responsibility for actions on the cycle to work scheme and its promotion, reducing emissions from business travel and commuting and making staff aware of resources available to help them lower their carbon emissions whilst at work.

The **Director of Education** will be responsible for investigating options for carbon friendly meals in schools, and working with the Corporate Estates team to improve energy efficiency within school buildings.

The **Director of Frontline Services** will have responsibility for implementing actions to change the council's vehicles to low emission vehicles.

The **Director of Corporate Estates** will be responsible for developing and implementing plans to improve the energy efficiency and quantity of low carbon heating schemes within the Council's buildings, including building integrated renewables. They will also work to install large scale renewable generation schemes such as ground mounted solar and wind farms.

The **Director of Corporate Estates**, the **Energy & Carbon Reduction team, Estates Managers and maintenance teams** will ensure carbon emissions are considered as a lifecycle approach in all aspects of work related to buildings and properties owned and managed by the Council.

The **Director of Prosperity & Development** will ensure that the planning and development functions within the council prioritise activities that support the council's decarbonisation aims, including land use, management and protection of biodiversity.

The **Director of Democratic Services & Communications** will support this decarbonisation strategy through their communications strategy, working to increase staff engagement.

The **Director of Social Services** will work to promote decarbonisation activities and ways of working across social services.

All staff will understand the ambition of RCTCBC to achieve Net Zero emissions by 2030 and will understand how they can carry out their role with due consideration of their environmental impacts.

Reporting

An annual Carbon Report will be in line with the Welsh Government guidance for the Net Zero Reporting. This will be reported to the Senior Leadership Team / Climate Change Cabinet Sub-Committee as appropriate in order to track our performance against the net zero 2030 ambition.

Stakeholder engagement

It is important to focus on the actions required by staff across the Council. Whilst departments have specific areas of responsibility, it is not solely the responsibility of the energy team to reduce energy use or the procurement team to purchase low carbon goods and services.

The Climate Change Engagement Plan demonstrates the overarching engagement required by including not just the council leaders and staff but the wider public across the county borough.

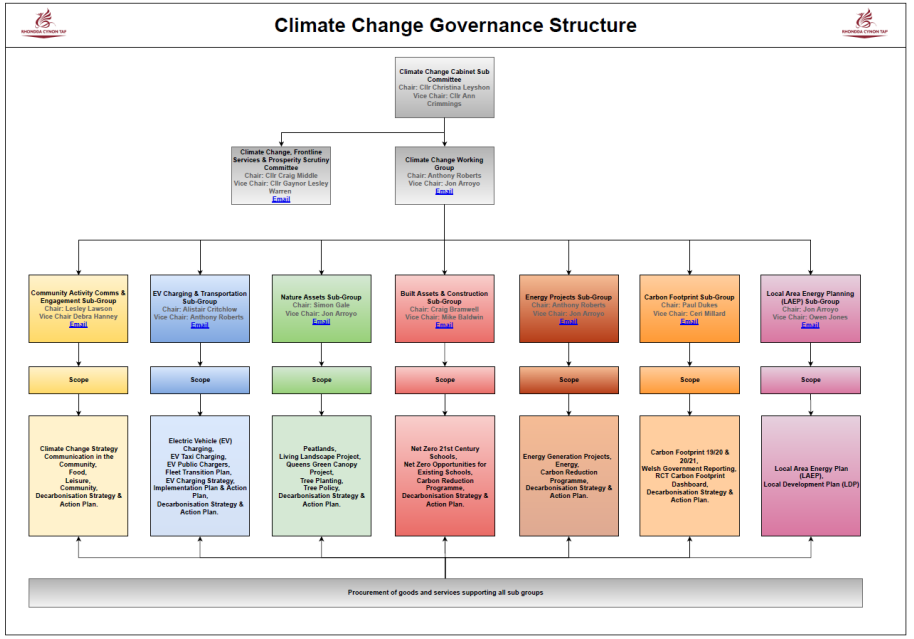
Management, reporting and updating of this document

This Action Plan is intended to be a live document integrated into management information to track decarbonisation progress. Revisions to finances and project timescales can also be included in the updated plan, and improvements made to the dissemination of information, as required.

This Decarbonisation Strategy will undergo a review process in 2025 to re-assess our plans and proposed actions. This review will enable consideration to be given to the technological advancements which assist decarbonisation.

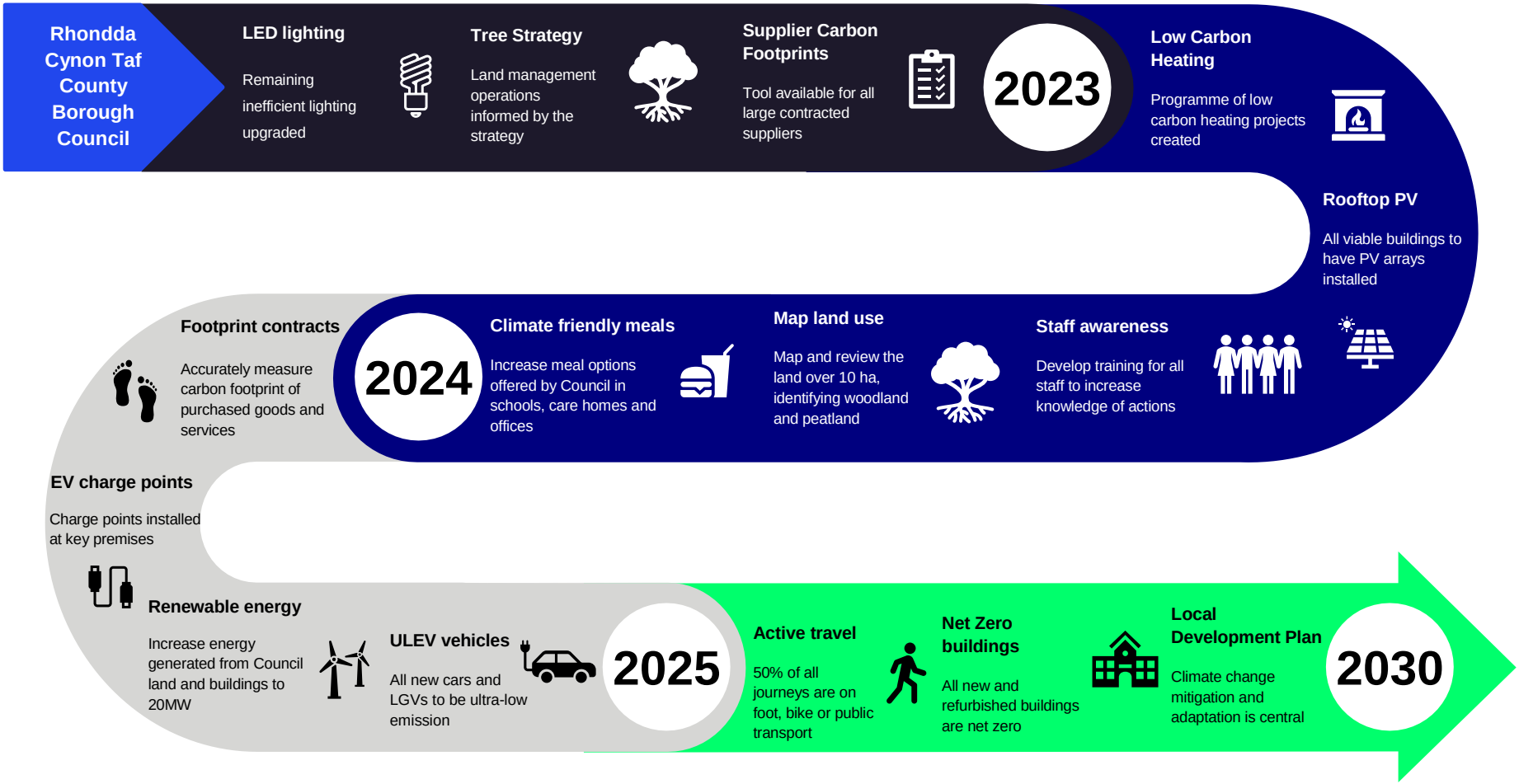
Climate Change Cabinet Sub-Committee Structure

There are seven sub-groups each with a particular focus on an element of decarbonisation and climate change. The governance structure for climate change is already established, and shown as follows:



7. Route Map Timeline

A visual route map to communicate a summary of actions to meet net zero is shown as follows:



Appendix 1: Modelling Assumptions

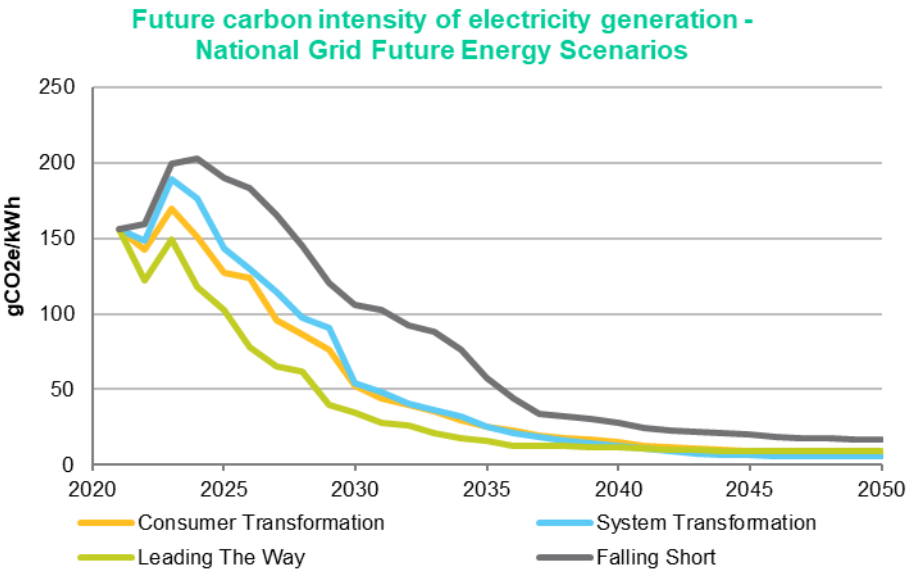
Net zero definition

The approach taken for this report is to use the net zero framework as defined by the Science Based Targets initiative (SBTi) – this aligns with the approach by Welsh Government in their Net Zero Strategic Plan. The table below shows the subtle differences between net zero and carbon neutral, which the council has been working towards previously.

Carbon neutral	Net zero
PAS2060 is the internationally recognised specification for carbon neutrality, which builds on the existing PAS 2050 environmental standard.	The Science Based Targets initiative (SBTi) has defined net zero targets for corporates.
Carbon neutrality has a minimum requirement of covering Scope 1 & 2 emissions, with Scope 3 encouraged but not mandatory.	The boundary of a net zero target includes global scope 1, 2 and 3 emissions of the organisation.
There is no requirement for a company to reduce its emissions on a certain trajectory in order to be carbon neutral.	To be net zero, an organisation must be reducing its emissions along a pathway that limits warming to 1.5°C with no or limited overshoot.
A carbon neutral footprint is one where the sum of the greenhouse gas emissions (CO_2e) produced is offset by natural carbon sinks and/or purchased carbon credits.	For net zero, the criteria are stricter to offset the remaining emissions; an organisation must purchase greenhouse gas removals that result in permanent carbon sequestration from the atmosphere.
	At least a 90% reduction in emissions, which aligns with the SBTi requirements for net zero.

Grid electricity

The carbon intensity of grid electricity has been falling due to the removal of coal-fired power stations, with the ramping up of renewable energy generation feeding into the grid further lowering carbon intensity. In the past decade, CO_2 intensity has dropped by 65% from 529 gCO_2/kWh in 2013 to 188 gCO_2/kWh in 2021.



The National Grid ESO Future Energy Scenarios (FES 2022) outline four different, credible pathways for the future of energy between now and 2050.

The RCTCBC Action Plan has been modelled against the Falling Short scenario – this provides the most conservative pathway the Council pathway.

Based on extensive stakeholder engagement, research and modelling, each scenario considers how much energy we might need; where it could come from; and how we maintain a system that is reliable. The four scenarios are shown in the figure below. Negative emissions from bioenergy and carbon capture and storage (BECCS) have been excluded as the viability of these technologies on a commercial scale is still uncertain.

Falling Short, previously named Steady Progression, assumes non-compliance with the UK Net Zero 2050 emissions target, due to low levels of decarbonisation and societal change. Leading the Way has very high levels of decarbonisation and societal change. Consumers adopt new technologies rapidly, and a mix of solutions is developed. This scenario aims for the “fastest credible” decarbonisation pathway. UK Net Zero is met by 2047.

System Transformation and Consumer Transformation both have high levels of decarbonisation and UK Net Zero is met by 2050. Larger, more centralised solutions are developed and the highest levels of hydrogen deployment are modelled in System Transformation. High levels of societal change with consumers adopting new technologies rapidly such as electrification of domestic heat and more decentralised solutions are developed in Consumer Transformation.

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Appendix 3: Carbon Reduction Initiatives carbon saving assumptions

Buildings

Ref	Action	Carbon saving assumptions	Cost assumptions
B01	Upgrade the remaining 20% of lighting to LED	189,023m^2 shown as no LED in data request. Savings of 5.5W/m^2, and assuming 2250hrs pa. By floor area 36% of LED is required.	
B02	Create a pipeline for low carbon heat projects, prioritising LPG-fired, failing and inefficient boilers, and leased buildings	No associated/quantifiable saving	
B03	Work up proposals for low carbon heat projects to install in 2023/24 as further funding becomes available. Focus on high carbon emitters and sites with existing underfloor heating.	Phase 1 LCH - 3x primary, 1 high, pool. Primary 100,000kWh, Secondary 1m kWh, Pool 1.2m kWh gas. 80% boiler eff, COP 3.	£2000/kW installed, kWh / 2500hrs to estimate kW
B04	Install low carbon heat projects	Phase 3 LCH - LPG sites to heat pumps, and 75% of remaining gas sites, at 80% heat pump	£2000/kW installed, kWh / 2500hrs to estimate kW
B05	Write a policy outlining the 'whole building' approach – look at insulation improvements when carrying out other works, fabric first, following CIBSE AM17 best practice for heat pumps	No associated/quantifiable saving	
B06	Carry out rooftop solar PV screening for all viable remaining buildings, including leased buildings, and create a pipeline of works	No associated/quantifiable saving	
B07	Install roof mounted solar on all viable buildings, including all schools	1245kW to be installed, based on 15kW at primary, 30kW secondary. 1000kWh/kW installed	1200£/kW
B08	Re-roofing projects to consider installing solar mounts on appropriately orientated roofs, ready for PV install at a later date	No associated/quantifiable saving	
B09	Optimise property portfolio by reducing the number of Council-owned or leased buildings, as more staff move to hybrid working	10% of floor area to be closed. Increase home working by 10%, reduce commuting by 10%.	
B10	80% of the energy used at our Bryn Pica Materials Recycling Facility will come from renewable sources by 2025	200kW, 186,337kWh generation from WGES report	1200£/kW

Ref	Action	Carbon saving assumptions	Cost assumptions
B11	Work with third sector organisations to ensure the sustainability of community facilities/venues in RCTCBC (EPC C by 2025), reduce the impact of rising energy prices and improve energy efficiency. This includes Council buildings leased to third sector groups.	No associated/quantifiable saving	
B12	Provide training for Building Managers - building on the Energy Policy and previous guidance given to Building Managers	2% saving from better control of energy use	
B13	Specific training for staff on how to operate and work in their buildings efficiently e.g. how to request temperature changes, policy of no additional fans / heaters etc	3% saving from better building control and spotting faults/maintenance issues	
B14	By 2030, all buildings will have an energy efficiency equivalent to DEC rating of C		
B15	By 2030, rooftop PV will be installed on all suitable buildings	1080kW to be installed, based on 30kW leisure centres, 15kW other. 1000kWh/kW installed	
B16	Further develop the use of hydrogen for fuel cells in Council buildings.	No associated/quantifiable saving	
B17	Work with third sector organisations to ensure the sustainability of community facilities/venues in RCTCBC (EPC B by 2028), reduce the impact of rising energy prices and improve energy efficiency. This includes Council buildings leased to third sector groups.	No associated/quantifiable saving	
B18	Complete all new builds and refurbishments for the Council's building estate in line with net zero standards by 2030, through the Sustainable Communities for Learning programme, to target low carbon heating systems		

Transport

Ref	Action	Carbon saving assumptions	Cost assumptions
T01	Implement our Electric Vehicle Charging (EVC) Strategy and supporting Implementation Plan, that will accommodate the transport needs of existing and future electric vehicle users.	Increase electricity consumption due to charging? Are there any figures in these documents?	

Ref	Action	Carbon saving assumptions	Cost assumptions
T02	In line with Wales' target for public sector organisations, we will aim for all our new cars and Light Goods Vehicles to be ultra-low emissions vehicles by 2025	3% diesel is for equipment, 100% gas oil is for equipment	
T03	Implement the Council's Fleet Transition Plan including the promotion and prioritisation of electric vehicles, with appropriate training for staff.	No associated/quantifiable saving	
T04	Trial further electric vehicles for different vehicle types.	No associated/quantifiable saving	
T05	Improve data collection for non-expensed forms of travel like walking or cycling	No associated/quantifiable saving	
T06	With the aim of achieving 25% of journeys on foot, bike or public transport by 2025, significantly reduce staff travel by car for commuting and business travel by continuing to maximise the use of technology for route planning and encouraging active travel and greater use of public transport.	Reduce all business travel by a quarter. Assume half of the reduced miles will be moved to active travel (walking and cycling), half on public transport so increase bus and rail travel proportionately	
T07	Develop potential for staff to walk / cycle to visits (social care) by zoning patches of care, and not only employing those who can drive	No associated/quantifiable saving	
T08	Encourage staff to commute by active travel and public transport. Cycle 2 Work scheme to be open year-round and more heavily promoted. Install enabling infrastructure (bike racks, showers, lockers). Continue to provide train/bus ticket loan scheme.	No associated/quantifiable saving	
T09	Incentivise low carbon transport with cycle/running clubs, friendly competition to promote active travel and apps like Strava. Use existing platforms like the staff Green Space on Microsoft Teams to promote progress and achievements.	No associated/quantifiable saving	
T10	Link the Safe Walking and Cycling Routes established by schools to Council staff and the wider community	No associated/quantifiable saving	
T11	Ensure that the transport services we commission, including Home to School, are zero or low carbon where possible	In S06	
T12	Provide training to educate frequent drivers on how to drive their own and fleet ICE (internal combustion engine) cars in a more fuel-efficient way	3% reduction in fleet and business travel in petrol and diesel vehicles	
T13	Investigate the potential for incorporating hydrogen vehicles into the Council fleet as they come onto the market, for example hydrogen Refuse Collection Vehicles	Remove 4% of diesel used for RCVs	

Ref	Action	Carbon saving assumptions	Cost assumptions
T14	In line with Wales' target for public sector organisations, we will aim for all our Heavy Goods Vehicles to be ultra-low emissions vehicles by 2030	Remove all diesel used for HGVs (936,990 litres for HGV fleet (60%))	
T15	By 2030, we will ensure that over 50% of all journeys are taken by public transport, bike or walking, or, where this is not possible, using electric vehicles.	Reduce all business travel by another quarter. Assume half of the reduced miles will be moved to active travel (walking and cycling), half on public transport so increase bus and rail travel proportionately	
T16	Over the next 5 years, make electric pool vehicles, and corresponding charging points, available at different appropriate Council locations e.g. depots and main offices	3% diesel is for equipment, 100% gas oil is for equipment	

Supply Chain

Ref	Action	Carbon saving assumptions	Cost assumptions
S01	Produce a paper outlining the options for suppliers to achieve net zero certification, in line with RCTCBC's tender requirements, and distribute it to suppliers	No associated/quantifiable saving	
S02	All procurement lead contracts have already been revised to include questions about suppliers' ability to calculate their carbon emissions. Relevant contract clauses have also been added to strengthen the Council's position. Work to roll these out in all upcoming contracts e.g., Supported Living and Home Care contracts, Transport contract	No associated/quantifiable saving	
S03	Identify departments who procure goods and services with the highest carbon impact and prioritise supporting the procurement approach in upcoming contracts	No associated/quantifiable saving	
S04	Request all contracted suppliers complete carbon footprint tool annually, and support them to do so by developing training	No associated/quantifiable saving	
S05	Support smaller suppliers to use the carbon footprint tool to take them along with RCTCBC on the decarbonisation journey	No associated/quantifiable saving	

Ref	Action	Carbon saving assumptions	Cost assumptions
S06	Specify low carbon travel/vehicles for those contracts where transport is a large contributor e.g., delivery services, transport services (Stagecoach etc), social care services, school transport	25% of transport services will be net zero by 2030. Reduce spend on Postal Services (£88k), Waste collection (£593k), Food and Beverage Serving (£4.2m), Motor Vehicles (£10.6m), Road Transport (£21.2m), Social Care (£76.3m) by 25% to show a decrease	May cost an additional 10% in spend to procure EV services etc. if premium applied
S07	Establish ambitious energy efficiency standards, that go beyond the minimum mandatory Government Buying Standards, when purchasing white goods, appliances and ICT equipment and share with all staff across the council	Reduced operating emissions from products, leading to reduced footprint of 3%. Reduce spend by 3%	May cost an additional 3% in spend to procure more energy efficient products if premium applied
S08	Increase the number of climate friendly meal options offered by the Council in our schools, care homes, offices and offered by our community meals service from a baseline that will be established in 2022/23.	Reduced emissions from food by 2025, (shown in the model by a 25% reduction in food cost £4.2m)	May reduce costs by 5% if purchasing less meat, dairy etc.
S09	Using WRAP guidelines for measuring emissions from food and drink, calculate an accurate carbon footprint for food provided by the Council using higher resolution specific emissions factors. Establish priorities for reducing the carbon footprint and environmental impact of food options.	No associated/quantifiable saving	
S10	When demolishing or refurbishing sites, look to establish a holding centre to store reusable materials. Use repurposed building materials from major projects e.g. timber.	Reducing emissions from construction by 2025 (shown in the model by reducing spend £66.6m by 5%)	Reduce spend on construction by 5% as reusing existing materials
S11	By 2026, 50% of our suppliers will be net zero certified	Reducing emissions by 2026 from all spend not included in travel-related spend (£102,915k) by 50%	Could increase costs by 10%
S12	Understand the carbon impact of all major purchasing decisions	No associated/quantifiable saving	
S13	Score tender responses based on suppliers' carbon footprints and reduction plans	No associated/quantifiable saving	
S14	Accurately measure the carbon footprint of all purchased goods and services	No associated/quantifiable saving	

Land Use

Ref	Action	Carbon saving assumptions	Cost assumptions
L01	Understand the sequestration potential of land in our ownership	No associated/quantifiable saving	
L02	Identify an accurate baseline of RCT woodland cover to inform future management by - Producing a whole RCT woodland cover map by 2024, including identification of all Council-owned woodland - Identifying the rate of natural woodland regeneration on Council-owned woodland sites over 10 hectares in size	No associated/quantifiable saving	
L03	By 2025, set a target for sustainably increasing woodland cover through The Natural Tree Regeneration Project	No associated/quantifiable saving	
L04	Draft Tree Strategy and Policy consultation to be reviewed, improved, approved, and then implemented into a working document	No associated/quantifiable saving	
L05	Work with partners to map and review Council-owned land to produce a long-term plan to optimise diverse land management, including identifying sites for natural woodland regeneration, sites suitable for food production, sites for peatland restoration, and sites where tree planting is appropriate.	No associated/quantifiable saving	
L06	Put climate change at the centre of our Local Development Plan, which is currently being renewed. This includes protecting RCT uplands, important habitats and peatbogs.	No associated/quantifiable saving	
L07	Encourage community gardening programmes, growing food locally and the potential for recruiting adults with complex needs to work in the community gardens and paying them a fair wage. Explore the suitability of parks and other Council land to support this.	No associated/quantifiable saving	
L08	Maximise carbon sequestration across Council-owned land	No associated/quantifiable saving	
L09	Rewet and appropriately manage peatbogs in Council ownership to restore biodiversity and maximise carbon sequestration.	No associated/quantifiable saving	

Ref	Action	Carbon saving assumptions	Cost assumptions
L10	Where appropriate, use planning conditions to deliver habitat protection and restoration as part of new developments. Engage developers through Supplementary Planning Guidance for environmentally friendlier design, which incorporates and enhances the natural features existing on greenfield sites.	No associated/quantifiable saving	
L11	Encourage new and better management of S106 sites with long term management goals in mind, protecting existing trees, hedges and green spaces	No associated/quantifiable saving	
L12	Contribute to the Queen's Green Canopy initiative and the National Forest for Wales through sustainable tree planting by investing £200,000 per annum until 2029	No associated/quantifiable saving	
L13	Attract private sector investment to increase areas of woodland regeneration and creation, ensuring that we protect and store carbon and reduce the risk of flooding	No associated/quantifiable saving	

Renewables

Ref	Action	Carbon saving assumptions	Cost assumptions
R01	Increase local renewable energy generated from Council land or buildings from 2021/22 baseline (2MW) to 20MW by 2025.	Includes totals from building integrated (roof mounted PV in B7)	
R02	Install solar schemes: - 200kw solar scheme at Bryn Pica - Land-based solar array	200kWp solar for Bryn Pica (covered in B10) Land based solar (in progress) 5MW Another land based Solar 5MW	
R03	Install wind schemes: - wind turbines	Potential for: Wind farm 6MW	
R04	Explore community cooperative energy projects to provide inexpensive, green energy for residents and businesses to purchase, including energy for electric vehicle recharging on publicly owned land.	No associated/quantifiable saving	
R05	Explore potential options to utilise existing energy sources including: - Geothermal energy from abandoned coal mines - Hydro electric projects	No associated/quantifiable saving	

Ref	Action	Carbon saving assumptions	Cost assumptions
R06	Use public sector land for green energy generation (solar, wind and hydro). Progress wind, hydro and solar energy schemes to reduce the cost of meeting our energy needs and generate income, whilst reducing our carbon footprint.	No associated/quantifiable saving	
R07	Work with partners including a local health board, Natural Resources Wales, and neighbouring authorities to maximise the collective resources to generate green energy across the region.	No associated/quantifiable saving	

Appendix 4: Alignment with Think Climate strategy

The table below indicates how this report aligns with, and builds on, RCTCBC's Think Climate Strategy: *Making Rhondda Cynon Taf Carbon Neutral by 2030*. The actions in the table below have been inspired by, or drawn directly from, the Climate Strategy. These actions are highlighted in this report with an asterisk.

Buildings		Transport		Supply chain		Land use		Renewables	
Action	**Page in Climate Strategy**	**Action**	**Page in Climate Strategy**	**Action**	**Page in Climate Strategy**	**Action**	**Page in Climate Strategy**	**Action**	**Page in Climate Strategy**
B2	page 5	T1	page 9	S1	page 5	L1	page 5	R1	page 7
B3	page 5	T2	page 5	S9	page 17	L2	page 10	R3	page 7
B6	page 5	T5	page 9			L3	page 10	R4	page 7
B7	page 5					L5	page 10		
B10	page 8					L7	page 11		
B11	page 16								

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Published in the UK: 2023.

RHONDDA CYNON TAF COUNTY BOROUGH COUNCIL

CLIMATE CHANGE CABINET SUB-COMMITTEE

23rd 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

Author(s): **Anthony Roberts, Head of Energy & Carbon Reduction, and Jon Arroyo, Energy & Carbon Reduction Manager.**

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 and 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.

Contact Officers: **Anthony Roberts 01443 281146**

Jon Arroyo 01443 281186

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.

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RHONDDA CYNON TAF COUNTY BOROUGH COUNCIL
CORPORATE ESTATES

RHONDDA CYNON TAF

APPENDIX 'A'

Hydro Electric Viability 'Overview Report'

Author: Jon Arroyo
Energy & Carbon Reduction Manager

Executive Summary

In 2017, the Welsh Government set a target to all Public Bodies across Wales to achieve carbon neutral status by 2030. In contribution to this aim, the Welsh Government has committed a target to generate 1 Gigawatt of locally owned renewable electricity and heat capacity in Wales by 2030.

Rhondda Cynon Taf County Borough Council recognises that it has an important role to play in supporting the increased scale up on renewable energy generation across the County Borough. As such, the Council are making every effort to increase its portfolio of renewable energy generation in contribution towards reduced energy consumption, carbon emissions, and the Welsh Government's 2030 Net Zero target.

In 2012, Rhondda Cynon Taf County Borough Council engaged with The Green Valleys Hydro (TGV) 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 potentially viable hydro scheme opportunities, proposing 30 of these sites for consideration and further assessment.

The 30 viable hydroelectric scheme sites are presented in depth throughout this report, accompanied by site description, power analysis and indicative costs. Each of these 30 schemes have been recommended for a detailed feasibility study in which more accurate data can be gathered on site. All the sites that have been recommended for more detailed feasibility have payback periods of less than 9 years. The hydropower resource generated across these schemes would support a range of project sizes, with private wire potential to Council buildings, providing community and Council benefit.

With the declaration of a Climate Emergency by the Welsh Government and the target to decarbonise the Council's estate to Net Zero by 2030, there is now an increased need to revisit the assessment of the proposed schemes and conduct further feasibility, on the schemes most favourable, in aim of increasing the Council's renewable energy generation.

It is the Council's ambition to maximise the roll out of renewable generation across the County Borough, bringing benefit to community groups and residents. Following assessment of the sites set out within this report and the progression of the most feasible sites to in depth feasibility, the remainder of the schemes can be adopted by the community for their assessment and implementation where suitable.

Methodology

The topographic and flow characteristics of all major streams within the area of interest have been analyse against their payback periods. For planning purposes, it is considered that where required, three phase supply is available reasonably close to the required connection point. The

costs of bringing a three-phase supply over a large distance into rural areas can often be prohibitive. In urban areas a three-phase supply is more readily available.

A Viability Report has been created for the sites with most potential which includes an estimate of the probable flow and head for the scheme, the likely energy generation capacity, and an estimate of construction costs based on our experience of similar sites.

The construction cost of each site detailed in this report has been estimated by TGV Hydro based on similar schemes. It includes all equipment and construction costs, the grid connection, and the commissioning of the schemes. The price also includes estimated external costs of ecological surveys that may be necessary for obtaining the permissions and licences and the cost of transformer upgrades that Western Power may require. The costs detailed in the appendices have VAT included at a rate of 20%. Should a project go ahead at a domestic scale then VAT would be charged at 5%.

This report outlines a first indication of each site's potential. To better determine a sites potential a full Feasibility would be required. This would include a site visit and research into factors which may affect the ecological impact, geology, construction methodology and costs which were not apparent from our initial desk-based exercise.

The next process is for the Client to review the information to identify those sites which they may consider taking forward for further investigation.

Areas Covered

The study focusses on the area of the Rhondda Cynon Taff with the reports presented in localised geographic areas. These are:

- North West Area: Hirwaun and surrounding area
- North East Area: Foothills of the Brecon Beacons and surrounding area
- Central West Area: Treherbert, Treorcy , Tonypandy and surrounding area
- Central East Area: St Gwynno Forest, Abercynon and surrounding area
- South West Area: Tonyrefail and surrounding area
- South East Area: Pontypridd and surrounding area

The sites examined from each search area are set out below.

Key for All Maps:

- Viable hydro sites catchments are coloured blue.
- Each schemes pipeline is coloured green.
- Pink line denotes the RCT area boundary

Each of the 30 most promising schemes have a site map included in the viability report summary found in the appendices.

Summary of Findings

Models have been used to predict the flow and power production potential at each site to estimate payback intervals. The longest expected payback interval for each system is presented below. Similarly, the construction cost estimations presented are for the greatest expected construction cost at the time of the report in 2012 which includes a 10% contingency but does not include VAT. Full details of the range of expected costs and benefits for the most promising 30 sites are outlined in each individual report in the appendix.

Table 1 summarises the findings from the 30 most viable hydro sites in the area. The smallest viable site identified in this exercise has the potential to generate in the region of £12,000 p.a. whilst the largest could potentially generate in excess of £103,000 p.a. Construction costs for developing each site range from £66,000 to £622,000. The estimated 'gross payback' of each site varies from less than 4 years to slightly over 9 years.

Table 1 The most viable hydroelectric schemes in RCT area.

SITE NAME	TGV Ref	PEAK POWER (kW)	ANNUAL kWh	REVENUE P.A. (£)*	APPROX CONSTRUCTION COST (£)**	APPROX PAYBACK YRS***
Afon Rhondda Fach	TGV12/003AA	83.2	502,061	81,117	622,221	6.9
Cwmaman	TGV12/003AC	26.3	99,435	20,128	120,018	5.4
Coed Cae	TGV12/003AE	22.9	90,011	18,211	98,432	4.9
Cwmpennar	TGV12/003AI	14.0	54,170	12,072	66,261	4.11
Ton Pentre	TGV12/0063AJ	30.9	121,606	24,616	123,777	4.6
Pistyll-goleu	TGV12/003AL	48.4	198,150	40,111	349,508	7.7
Ynysybwl 1	TGV12/003AP	30.0	139,112	28,160	162,710	5.2
Nant Cae-dudwg	TGV12/003AT	47.6	190,398	38,542	236,212	5.5
Clydach Vale	TGV12/003AU	26.7	103,793	21,011	105,760	4.6
Trehafod	TGV12/003BC	16.4	70,462	15,361	69,170	4.2
Rhiw-yr-uchain	TGV12/003BD	13.9	56,327	12,553	79,230	5.7
Thomastown	TGV12/003BG	22.4	88,794	17,974	116,330	5.9
Ty-draw	TGV12/003BH	13.4	54,213	12,082	112,639	8.1
Graig	TGV12/003BI	30.0	132,637	26,849	231,452	7.6
Rhydyfelin	TGV12/003BJ	24.3	95,818	19,396	105,424	4.10
Ty Rhiw	TGV12/003BQ	14.0	58,422	13,020	102,364	6.11
Nant-moel Reservoir	TGV12/003F	23.6	83,199	16,842	145,195	7.6
Llwydcoed	TGV12/003G	20.6	74,279	15,036	130,327	7.6
Pont Walby	TGV12/003I	50.5	174,778	35,380	243,776	6.1
Rhigos	TGV12/003J	13.7	55,805	12,437	133,165	9.2

SITE NAME	TGV Ref	PEAK POWER (kW)	ANNUAL kWh	REVENUE P.A. (£)*	APPROX CONSTRUCTION COST (£)**	APPROX PAYBACK YRS***
Mynydd Cefn y Gyngon	TGV12/003K	25.5	100,381	20,320	100,685	4.5
Llwyn-helyg	TGV12/003L	14.8	56,859	12,672	79,111	5.6
Blaenrhondda 1	TGV12/003Q	99.4	513,409	103,929	382,119	3.4
Blaenrhondda 2	TGV12/003R	55.2	215,887	43,702	183,170	3.9
Bleanrhondda 3	TGV12/003S	25.8	100,203	20,284	92,605	4.1
Bleanrhondda 4	TGV12/003T	29.7	123,510	25,002	102,786	3.9
Cwm Selsig	TGV12/003U	56.0	217,760	44,081	214,626	4.4
Tynewydd	TGV12/003W	29.8	121,401	24,575	128,018	4.8
Cwm Saerbren	TGV12/003X	24.5	96,627	19,560	100,805	4.7
Cwmparc	TGV12/003Z	54.4	257,170	52,059	348,977	5.11

*Before tax and other deductions
**Costs do not include VAT
*** Payback calculation includes an annual incremental increase in the price for electricity export, the FIT rate and domestic bill savings.

Revenue Rates and Technology Comparisons

The estimated annual revenue for a scheme will not be the same as the estimated profit. The following are typical considerations that may have an impact on profit margins, and these have not been included in table 1 above:

- General expenses such as maintenance, equipment replacement and insurance.
- Tax liabilities, interest payments on loans.
- Some of these sites may involve using multiple landowners to enable grid connection. These subsidiary landowners may require a payment before granting the required Deed of Easement.
- Potential planning obligations through a Section 106 agreement to ensure that some of the scheme revenue is diverted into ecological improvements.

The income calculations assume that the schemes will be eligible for the Feed-in Tariff from the UK Government. This support is paid to renewable energy producers in various amounts according to type of technology and the power produced. The core FITS tariff is based on the total number of kWh's that are generated. In addition, all exported electricity will benefit from an addition export fee. Many renewable energy producers look to maximise the use of their generated electricity on site to offset electricity that they use to buy in. Any excess electricity is then exported to the national grid.

The FITS generation tariff varies for each technology and with the size of scheme. The rates are index linked against the retail price index (increase applied each April). The unit rate that excess electricity is sold can be negotiated with the electricity companies. FITS guarantees a minimum rate (£0.031 per kWh at the time of reporting) the electricity companies must pay. This again is index linked rising every April.

Currently from the moment of commissioning FITS payments are guaranteed for 20 years for Hydropower generation. The overall FITS mechanism is regularly reviewed and the terms and conditions for new schemes could change.

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 the hydroelectric system are higher than other technologies. Table 3 compares 11kw installations for different technologies. These figures reflect the fact that hydro power can be generated 24 hours a day (unlike PV) and that although there are seasonal fluctuations in flow there is a more consistent generating output than from wind.

Table 2 FITS rates for different technologies.

Technology	Scale	FIT Rate/KWH
Hydro	< 15kW	20.9p*
Hydro	15-100kW	18.7p*
Hydro	100KW-2 MW	11.0p*
Wind	1.5-15kW	28.0p*
Wind	15-100kW	25.3p*
Solar PV	4-10 kW	37.8p**
Solar PV	10-100 kW	32.9p**

*Rates to be reviewed in April 2012 for all new schemes
**For schemes commissioned before 12th December 2011.

Table 3 Comparison of returns for 11kW systems of different technologies taking into account seasonal variations and daily fluctuations.

Technology	System size	FIT Rate/KWH	Annual Return
Wind (Avg. 7m/s)	11kW	28.0p	£6,995
Hydro	11kW	20.9p	£12,055
Solar PV	11kW	32.9p	£2,895

IMPORTANT NOTE:

The FiT rates referred to herein, and which were in force at the time of the original report, are no longer applicable.

The FiT scheme, as referred to in the original report, was discontinued by the UK Government since 2019.

A replacement scheme has now been introduced in 2022.

The new scheme goes under the title of 'SMART Export Guarantee'.

It should also be noted that the rates in the new scheme will vary considerably from those used to assess finances in the original study, and this will be fully considered in any subsequent feasibility studies.

Sites Recommended for Full Feasibility Study

There is significant potential for the development of micro hydro installations across the RCT area with 30 sites recommended for further investigations. In order for the 30 recommended schemes to be accurately costed and assessed a further detailed onsite feasibility study is essential.

Taking the Projects Forward

A typical hydro project should take about 12 -18 months from conception to implementation. The main stages will be the Feasibility Study, Design and Permission, and Construction.

(1) Feasibility Report

Any feasibility study commissioned for a prospective installation would include details of:

- *Geographical analysis* – discussing the catchment area of the proposed installation as well as the particulars of the local geography and topography on site. This analysis should enable the description of the Abstraction regime required for the proposed system design.
- *Civil works* – A description of any required preparation of site, the intake structure, the forebay tank, turbine house and any discharge infrastructure needed.
- *Turbine and generating equipment* – A description of the generating equipment explaining its suitability to the proposed installation
- *Grid connection* - details of the proposed grid connection location and technique demonstrating that the connection will be sufficient to deal with the generation capabilities of the proposed system.
- *Energy resource and projected income* - Although it is unrealistic to expect the feasibility study to accurately predict rainfall levels in the coming years, an educated estimate of annual income based on catchment area analysis and system design.
- *Full detailed costing of the proposed installation* - This should include parts and labour as well as the costs of any permission required for installation.
- *Other features* – the feasibility study should highlight any anomalous features such as listed buildings, Nature reserves or SSSi's including preserved trees that may possibly be affected by any installation. The Feasibility Study should also highlight any potential planning or environmental issues that may stand in the way of a proposed installation.

(2) Design and Permissions

Assuming that the feasibility study has highlighted no barriers standing in the way of the proposed installation it will be necessary to approach the local planning authority and the Natural Resources Wales for formal permissions for the installation.

i. Natural Resources Wales (NRW)

An abstraction licence is needed for permission to remove the water from the river or stream. Although with hydroelectric the water is going to be returned to the same stream a little further down, it will still leave a section of river or stream with less water than it had before, known as the *depleted reach*. The reduced amount of water in the depleted reach can affect organisms including migratory fish, endangered

indigenous crayfish, and mammals such as otters as well a range of lower plant species (mosses and bryophytes) that depend on the increased relative humidity of the habitat to survive and thrive.

The abstraction licence gives permission to abstract water, to create a weir or dam and to discharge the water back into the waterway. The basic cost of the application is around £200 but there may be other associated costs including the advertising of the application and surveys as required by NRW . It is important to call NRW and discuss the proposal even before the feasibility study takes place in order to highlight any potential pitfalls or barriers in the way of development as soon as possible. The abstraction licence application is a complicated process with many required fields of data.

ii. Local Planning Authority

The local planning authority will have several key purposes in mind when considering any application, namely:

- The appearance of the scheme, they will consider whether it is sympathetic to the local vernacular and landscape
- Pollution with hydro electrics, any noise pollution resulting from an installation.
- Disturbance to the local area during the construction of the installation, to residents and disruption to the local traffic
- Preservation of any structures of historical importance in the area such as listed buildings or other archaeological features.

Conclusion

As an area of significant hydro potential, RCT has a unique opportunity to develop a substantial number of micro-hydro generation schemes. The initial studies have indicated that are over 30 viable schemes that could be developed to both reduce carbon emissions and earn a worthwhile return on investment by utilising the 20-year guaranteed and index linked Feed-in Tariffs. Any of the 30 recommended sites will require full feasibility reports completed to be considered for progressing to the next stage of the project.

Appendix

Site Identification Overview

Table 4 North West: Hirwaun and surrounding area

SITE NAME	Map Ref.	Peak Power (kW)	Intake Grid Reference	Site Description
Pontneddfechan	H	7.2	SN 9101 0744	Pipe is trenched through open fields and includes one major road crossing although through an existing culvert. Turbine house is outside of the client's identified area. Grid connection is assumed to be available in Pontneddfechan at an approximate distance of 50m from the turbine house.
Pont Walby	I	50.5	SN 9041 0552	Pipe is trenched adjacent to wooded corridor. Site is based on the border of the client's identified area.
Rhigos	J	13.7	SN 9254 0410	Pipe follows contour before dropping to turbine house, potential flow anomalies surrounding local disused mines.
Mynydd Cefn y Gyngon	K	25.5	SN 9631 0290	Pipe is trenched across open fields, Grid connection is available within 30m at a local property
Llwyn-helyg	L	14.8	SN 9778 0203	Pipeline is trenched alongside existing forestry track., Grid connect is available at local farm and camping
Llwyn-helyg 2	M	1.8	SN 9862 0210	Pipeline is trenched alongside existing forestry track., Grid connect is available at local farm
Llywn-helyg 3	N	10.3	SN 9934 0207	Pipeline is trenched through agricultural land, Grid connect is available at , or near, local school.
Blaenrhondda 1	Q	99.4	SN 9197 0170	Difficult terrain including rocky outcrops and coniferous plantation. Lower stages could utilise forestry tracks. Significant export potential.
Blaenrhondda 2	R	55.2	SS 9180 9970	Difficult penstock route through coniferous plantation. Local domestic connections available.
Bleanrhondda 3	S	25.8	SS 9154 9924	Difficult penstock route through coniferous plantation. Local domestic connections available.
Bleanrhondda 4	T	29.7	SS 9084 9879	Penstock route through coniferous plantation and agricultural land. Local domestic connections available.
Tynewydd	W	29.8	SS 9366 9990	Penstock through agricultural fields. Utilise existing culvert for export in Tynewydd.
Cwmaman	AC	26.3	SS 98331 9956	Pipe trenched in steep sided valley following forestry tracks, export at local property.
Rhos-gwawr	AD	6.9	SO 0061 0032	Small catchment and only medium head, export available at multiple local properties.
Afon Rhondda Fach	AA	83.2	SN 9505 0158	Pipeline starts at outflow from existing reservoir, detailed reservoir flow data required and status of use. Pipe runs trackside through coniferous plantation. Maximum power will likely be limited to compensation flows of reservoir.

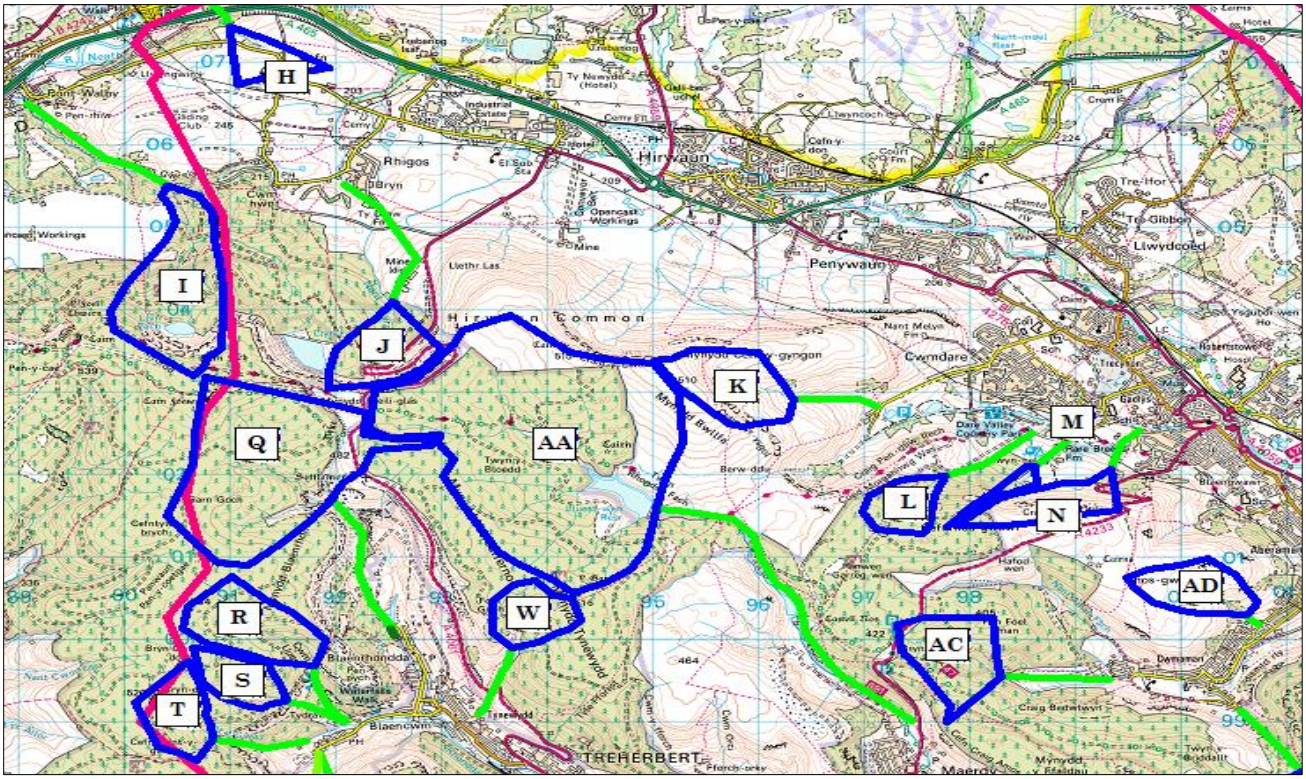


Figure 1 Location of potential micro hydro sites in North West RCT

Table 5 North East: Foothills of the Brecon Beacons and surrounding area

SITE NAME	Map Ref.	Peak Power (kW)	Intake Grid Reference	Site Description
Garwnant	A	30.0	SN 9951 1327	Pipe trenched along forestry track. This site has already been progressed by the landowner to seek an abstraction licence and planning permission.
Penderyn	C	5.5	SN 9585 0859	Pipe trenched through open fields. Grid connection assumed to be available at Penderyn distillery adjacent to the turbine house.
Gelli-ben-uchel	D	12.9	SN 9589 0752	Pipe is trenched through open fields and deciduous woodland; grid connect available approximately 80m away at local property.
Nant Hir Tributary	E	4.7	SN 9739 0900	Pipe is trenched through open fields of a moderate slope and some deciduous woodland. Export is available through a property approximately 50m away
Nant-moel Reservoir	F	23.6	SN 9797 0705	Proposal to use excess water from reservoir. Utilise existing culvert with penstock through agricultural land. (NEW IMAGE NEEDED)
Llwydcoed	G	20.6	SN 9941 0629	Small catchment, pipe trenched across pasture on moderate slope to export at a local property.
Ffrwd Uchaf	IB	9.6	SO 0140 0883	Pipe surface laid through coniferous plantation and trenched in open field. Grid connection is available approximately 60m away

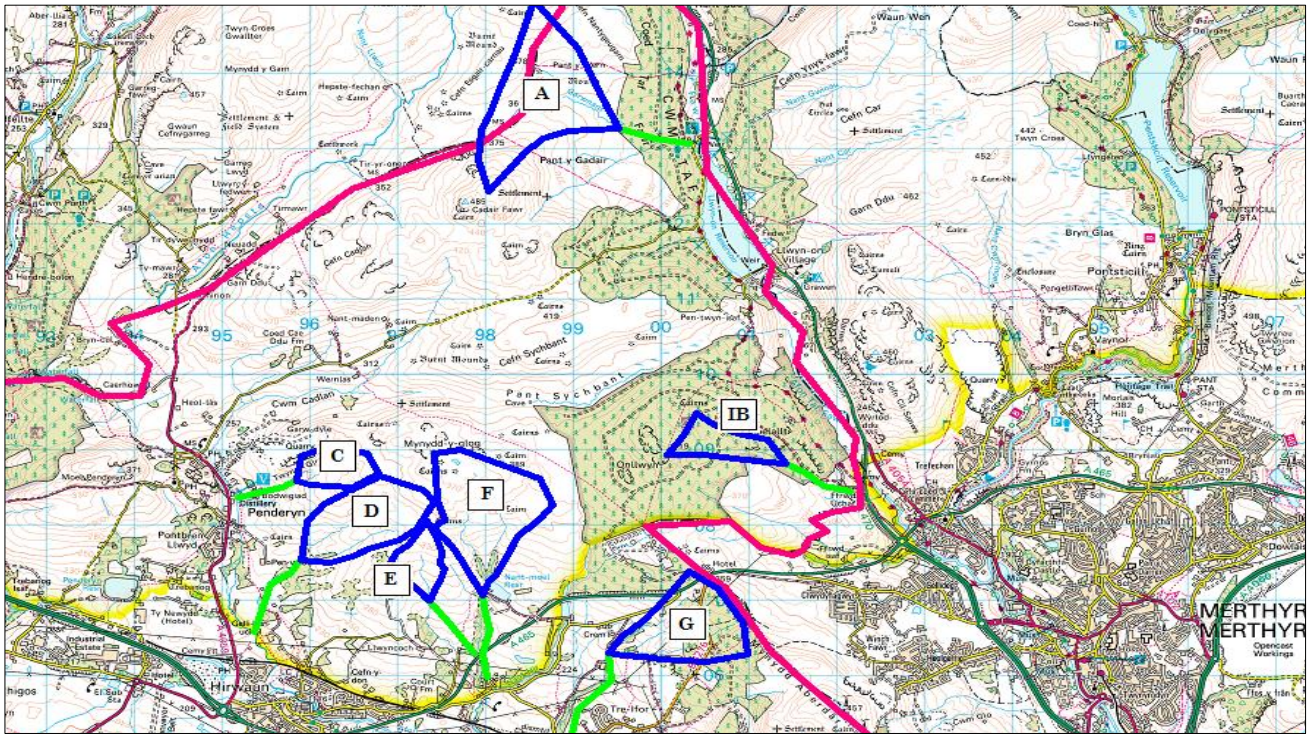


Figure 2 Location of potential micro hydro sites in North East RCT

Table 6 Central West: Treherbert, Treochy, Tonypandy and surrounding area

SITE NAME	Map Ref.	Peak Power (kW)	Intake Grid Reference	Site Description
Cwm Selsig	U	56.0	SS 9132 9774	Mixture of plantation and agricultural fields for penstock. Multiple export options in Blaen cwm. 3-phase connection would be preferable.
Blaen cwm	V	8.2	SS 9198 9815	Steep penstock laid through agricultural fields. Multiple export possibilities available through single phase connection.
Cwm Saerbren	X	24.5	SS 9325 9784	Pipe surface through coniferous plantation exclusively. Multiple Grid connections available in Treherbert.
Tyle Coch	Y	8.0	SS 9448 9668	Small catchment, high head. Pipe trenched in and alongside coniferous plantation with grid connection available at the local school.
Cwmparc	Z	54.4	SS 9382 9576	Pipe laid through agricultural fields with multiple connection options throughout Cwmparc.
Ton Pentre	AJ	30.9	SS 9543 9500	Entire pipe run trenched in open fields, follows contour before dropping to turbine house. Multiple export options.
Ystrad	AK	12.7	SS 9860 9611	Small catchment high head. Pipe run is trenched alongside deciduous woodland corridor. Multiple export options.
Clydach Vale	AU	26.7	SS 9601 9307	Medium catchment with high head, steep sided valley poses access issues for excavation machinery. Would be sited upstream of existing hydro scheme.
Penrhys Isaf	AV	7.2	ST 0115 9333	Small catchment and high head allows for small diameter pipe available in rolls. Trenched through agricultural fields and multiple export options.
Penygraig 1	AY	12.8	SS 9880 9163	Small catchment on moderate slope, trenched through agricultural land. Export available through local school.
Penygraig 2	AZ	4.3	SS 9935 9086	Small catchment with pipe trenched on moderate slope through agricultural land. Multiple export options.
Penrhiwfer	BA	10.4	SS 9976 9018	Moderate catchment and head. Penstock through agricultural fields. Export at local property
Trehafod	BB	9.1	ST 0339 9056	Small catchment high head, pipe trenched in open field on moderate slope, export option available at local heritage centre.

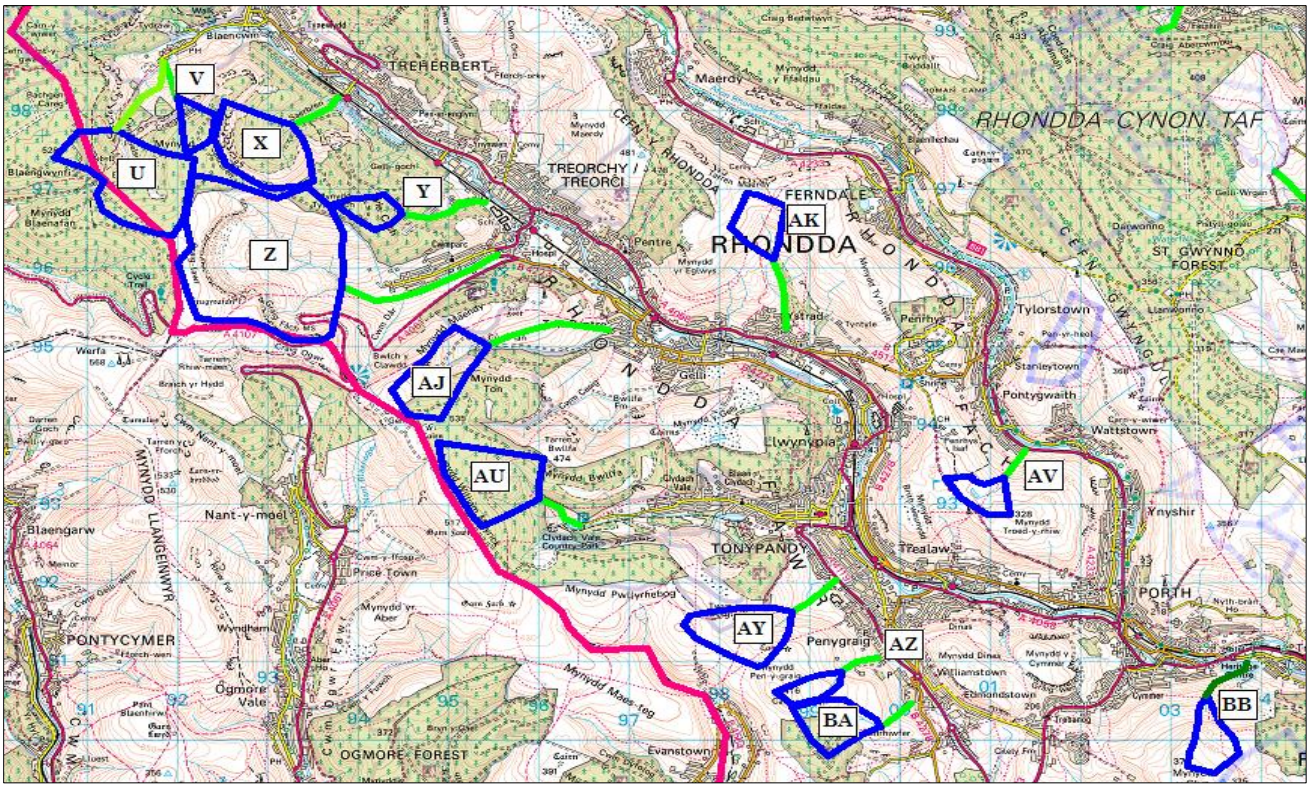


Figure 3 Location of potential micro hydro sites in Central West RCT

Table 7 Central East: St Gwynno Forest, Abercynon and surrounding area.

SITE NAME	Map Ref.	Peak Power (kW)	Intake Grid Reference	Site Description
Ffynnon-y-Gog	O	8.3	SO 0357 0220	Small catchment high head, pipe trenched across open field on moderate slope. Grid connection through adjacent property within 50m.
Coed Cae	AE	22.9	ST 0113 9841	Steep sided valley with a mix of coniferous plantation and agricultural land. Multiple export connection options.
Abercwmboi 1	AF	3.0	ST 0249 9938	Small and narrow catchment. Penstock through coniferous plantation. Multiple export options in Abercwmboi.
Abercwmboi 2	AG	3.3	ST 0263 9931	Small and narrow catchment. Penstock through coniferous plantation. Multiple export options in Abercwmboi.
Abercwmboi 3	AH	8.6	ST 0287 9902	Small catchment high head, pipe trenched in open field on moderate slope.
Cwmpennar	AI	14.0	SO 0541 0020	Pipe trenched through open field and surface laid through deciduous woodland. Will need to avoid cemetery. Export at local property.
Pistyll-goleu	AL	48.4	ST 0299 9663	Pipe trenched through coniferous forestry with potential to utilise existing reservoir structures. Flow data verification needed if reservoir is still active.
Gelli Wrgan	AM	12.5	ST 0348 9759	Pipe surface laid through forestry and trenched across pasture. Export at nearby property approximately 80m.
Gelli Wrgan 2	AN	11.2	ST 0414 9723	Pipe length trenched across pasture, export at adjacent property approximately 50m.
Ysysboeth	AO	10.9	ST 0695 9581	Small catchment high head. Pipe surface laid through forestry, export at local property.
Ynysybwl 1	AP	30.0	ST 0450 9440	Possibilities for penstock either through fields or woodland corridor. Multiple connection options.
Ynsysbwl 2	AQ	5.1	ST 0514 9387	Small catchment and high head allows for small diameter pipe available in rolls. Trenched penstock through fields.
Carnetown	AR	1.8	ST 0740 9415	Small catchment with a surface laid penstock through coniferous plantation.
Llys Nant	AS	14.0	ST 0568 9310	Medium catchment and moderate head. Pipe trenched across pasture. Export at adjacent property.
Nant Cae-dudwg	AT	47.6	ST 1088 9336	Moderate catchment and head. Pipe trenched along contour of valley before rapid fall through pasture. Export at local property
Wattstown	AW	8.6	ST 0181 9454	Medium catchment with a short pipe run trenched across pasture. Multiple options for connection to the grid.
Ynyshir	AX	2.5	ST 0289 9317	A small scheme with penstock trenched through pasture. Multiple export options.

Trehafod	BC	16.4	ST 0421 9201	Small catchment with high head. A mixture of over-ground through woodland and trenched through pasture for the penstock route. Grid connection at local property.
Rhiw-yr-uchain	BD	13.9	ST 0553 9180	Small catchment with high head. A mixture of over-ground through woodland and trenched through pasture for the penstock route. Grid connection at local property.

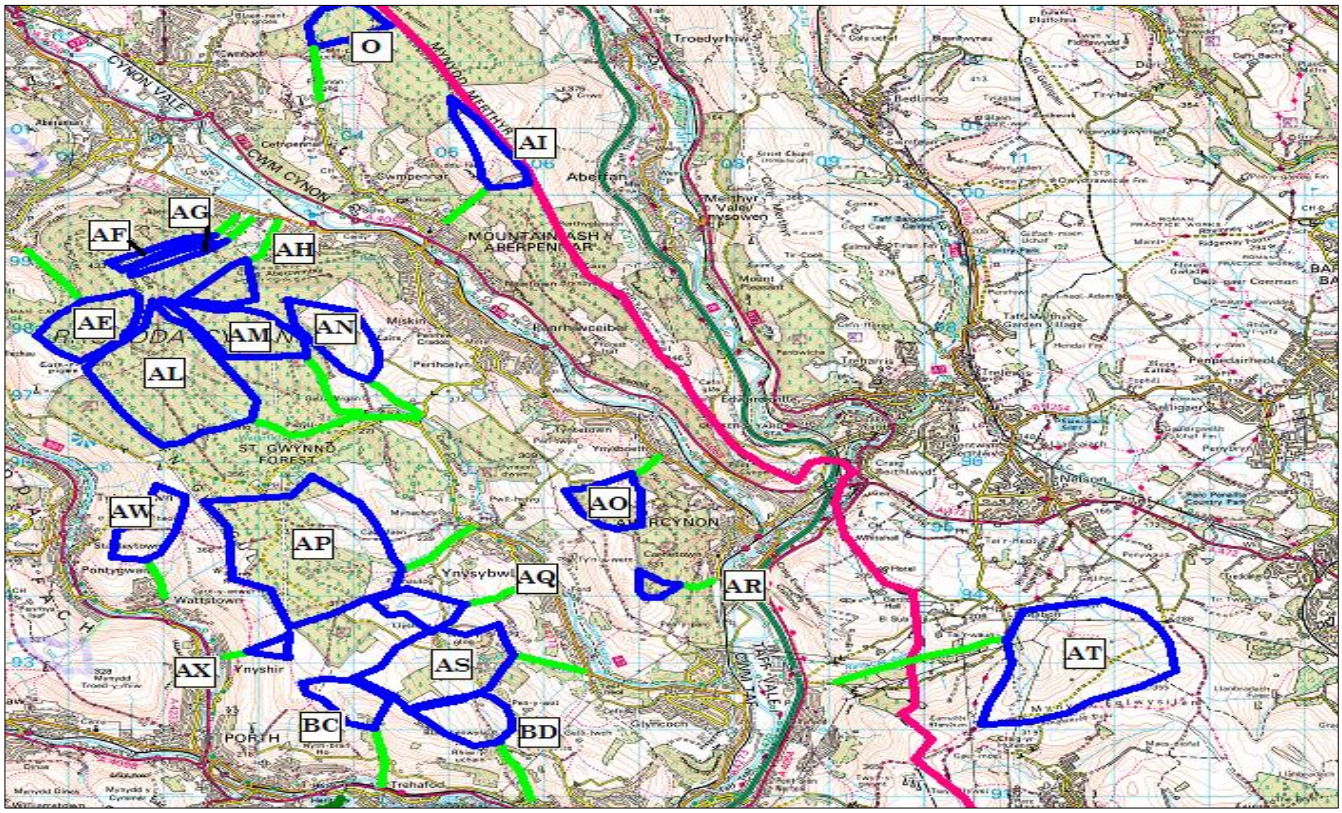


Figure 4 Location of potential micro hydro sites in Central East RCT

Table 8 South West: Tonyrefail and surrounding area

SITE NAME	Map Ref.	Peak Power (kW)	Intake Grid Reference	Site Description
Tynewydd	BE	2.4	SS 9781 8712	Small catchment with a long penstock. All works through pasture land with assumed export 100m from turbine location.
Pen-yr-heol	BF	2.3	ST 9771 8664	Small catchment with a long penstock. All works through pasture land with assumed export 100m from turbine location. (Export could be the same property as scheme BE).
Thomastown	BG	22.4	SS 9936 8654	Medium catchment with high head. Penstock trenched across pasture with multiple export options through adjacent properties.
Llantrisant Forest	BL	2.6	ST 0175 8475	Small catchment and high head but limited availability for export to the Grid. Penstock would be surface laid in forestry.
Mynydd Garthmaetwg	BM	1.5	ST 0232 8441	Small catchment and high head but no suitable export point, pipe would be surface laid in forestry.
Craig-melyn	BN	3.3	ST 0186 8338	Small catchment and high head, pipe surface laid in forestry although possibility of part trenching through pasture is available. Export through local property.
Garth	BO	3.6	ST 0237 8305	Small catchment with high head. Penstock trenched through agricultural fields. Export at local property.

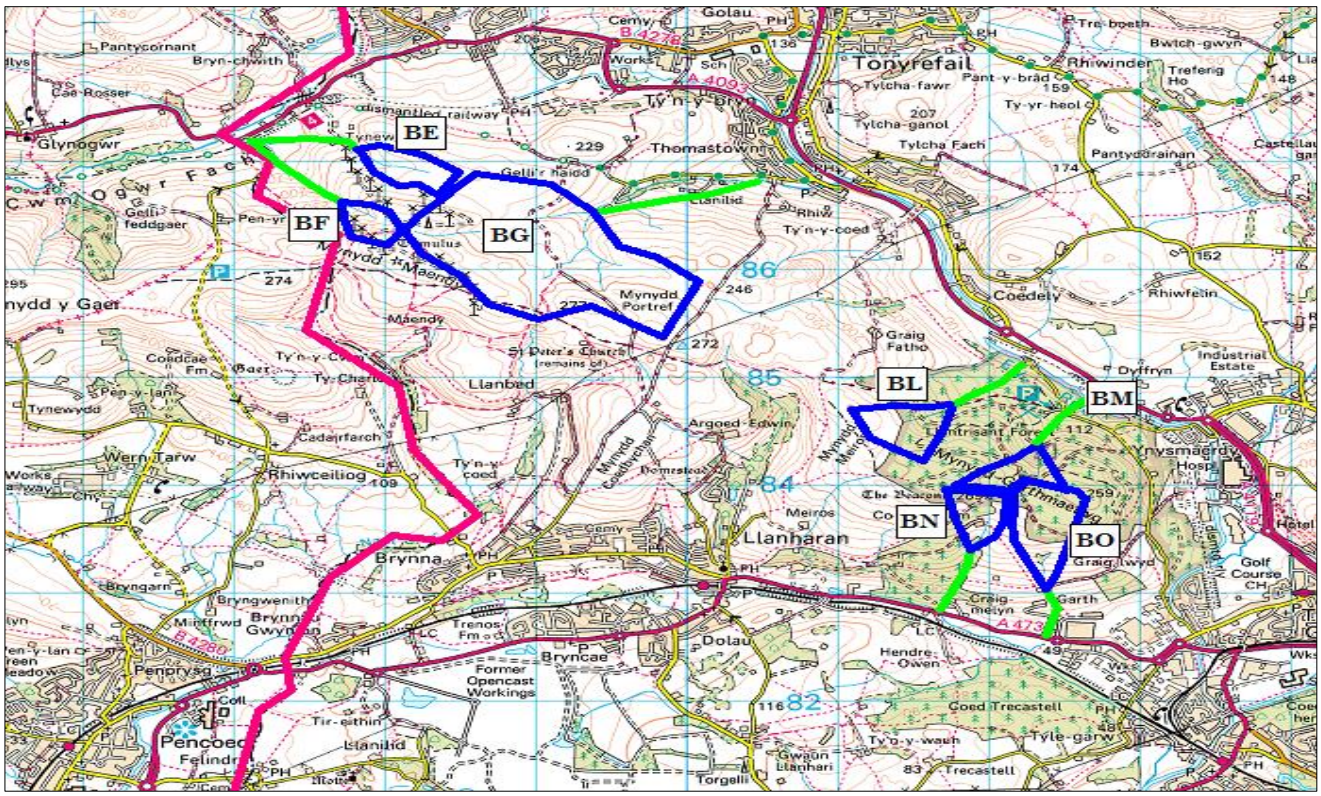


Figure 5 Location of potential micro hydro sites in South West RCT

Table 9 South East: Pontypridd and surrounding area

SITE NAME	Map Ref.	Peak Power (kW)	Intake Grid Reference	Site Description
Ty-draw	BH	13.4	ST 0465 8925	Medium catchment and high head. One unclassified road crossing with penstock trenched through pasture. 1 of 2 potential systems on the same waterway.
Graig	BI	30.0	ST 0582 8864	Large catchment with medium head. 2nd potential system on watercourse (BH). Most works assumed within wooded corridor.
Rhydyfelin	BJ	24.3	ST 1032 8906	Medium catchment with high head. Penstock would be trenched in open field adjacent to wooded corridor. Multiple export options exist.
Gelynog	BK	8.3	ST 0524 8731	Small catchment with a long pipe trenched across pasture and adjacent to wooded corridor. Export through adjacent property.
Hendrescythan	BP	5.4	ST 0905 8327	Small catchment with moderate head. Penstock would be through a mix of coniferous and deciduous woodland. The proposed intake location is outside of RCT area.
Ty Rhiw	BQ	14.0	ST 1368 8472	Moderate catchment with high head. The penstock would be a mixture of trenching through pasture and laid through deciduous woodland.

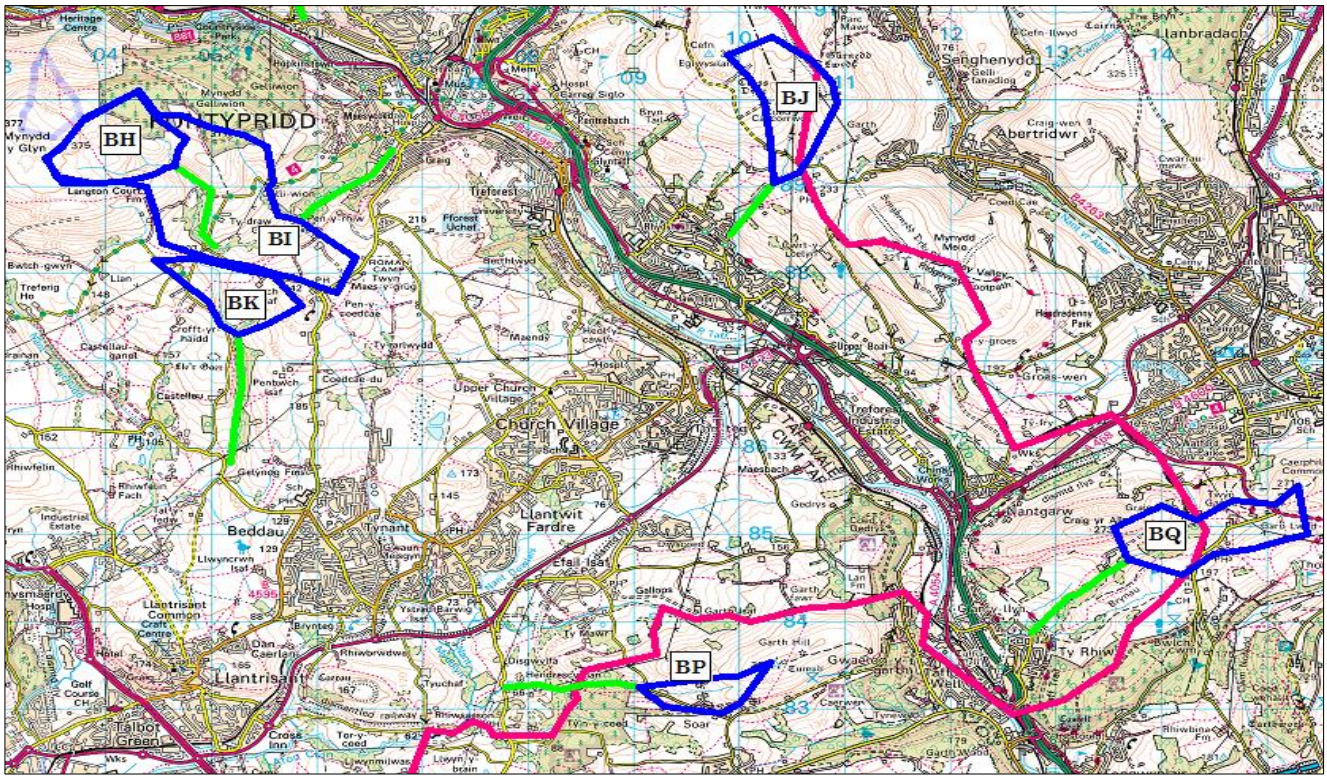


Figure 6 Location of potential micro hydro sites in South East RCT

Hydro Electric Technology

Hydroelectric plants work by converting the potential energy from water at height into electrical energy. This is achieved through water powering a turbine - using the rotational movement to transfer energy through a shaft to an electric generator.

The two basic classifications of hydro electric generators are '*High head*' and *'Low head*'. *Head* refers to the height from which the eater drops before reaching the turbine. Therefore '*low head'* refers to mills and generators in large rivers with great volumes of water that meander through the lowland valleys. *'High head'* is used to describe those systems that use only a small amount of water but can use the water once it has dropped from a great height.

To capture this potential energy in a controlled form, some or all of the water in a natural waterway can be diverted from a watercourse through an intake and into a pipe which will transport the water downhill. The pipe is smooth bored compared to the rough stream bed. There is far less friction loss in the pipe and this saved friction is the energy that is used to drive the turbine. In the turbine house at the bottom of the system the water can be directed in a focussed jet under pressure onto a turbine wheel. The rotation of the turbine and the generator, to which it is attached, convert the energy into electricity that can be exported to the national grid.

Micro hydro is typically defined as the generation of electricity from a few hundred watts up to 100kW.

Generation Calculation

Hydro power is a mature and well-understood technology that offers many advantages over other renewable energy:

- High efficiency and high power density
- Long system lifetime (up to 50 years)
- Predictable energy outputs
- Excellent load factor characteristics

The technologies required for generation differ from site to site according to various site characteristics and these are outlined below. The fundamental elements which make up the basic power generation equation are explained in below. However, there are several other factors which will reduce the *actual* power that can be generated at any site. There are multiple factors that reduce your potential energy during conversion. These include head loss in pipes, efficiency of turbines, loss in cables, and loss in inverters.

In order to simplify the calculation at the planning stage of a hydroelectric installation, these efficiency losses are assumed to amount to **50%** of the ideal calculation.

Simple power calculations can then be calculated from the flowing variables:

- **Q (flow**): this is the amount of water that can be abstracted from a given point in a stated period of time. It is usually measured in m^3/s or l/s. The abstraction limit if often limited to the annual mean flow of the river (see below for additional note on abstraction limits).
- **H (head):** This is the vertical distanced that water drops from the source to the turbine. It is measured in meters, m.
- **Gravity constant:** Also known as acceleration due to gravity, it is represented by the letter 'g' and for the purposes of this calculation can be regarded as a constant of 9.8m/s/s.
- **System efficiency:** Overall system efficiency.
- **Potential energy:** The potential output of any site is usually expressed in Kilowatts (kW)

The basic power of a system can be expressed by the equation:

- Power (in kW) = Q (in m^3/s) x H (in m) x g (in m/s/s) x Efficiency (as a fraction)

Example: At the abstraction point a watercourse has an annual mean flow of 0.03m3/s. The vertical height difference from the intake point to the turbine house is 100m. Assume a 50% system efficiency. Hydro system potential in this case would be about 0.030 x 100 X 9.8 x 0.5 = 14.7 kW.

In determining the limits of abstraction from a water course the Natural Resources Waleswill not allow any installation to abstract all of the water in a river or stream. The Natural Resources Waleshave regulations and standards to protect both the local flora and will place a restriction on the water that can be abstracted.

Stream flows are usually measured in terms of Q% values. A Q rate of Q75 represents the stream flow that is in the steam for at least 75% of the year. In most cases the Natural Resources Waleswill set an initial amount of water that must remain in the water course at all times; this is known as the Hands-off Flow (HOF). No abstraction can take place while the stream flow is less than the HOF. The HOF is usually set between Q85 and Q95.

The EA will then set the abstraction regime above the HOF. Current guidance is that abstraction can be 100% of flow above the HOF but only up to a limit equivalent to Qmean.

Hydro scheme's intake dam/weir designs and automatic flow regulators ensure that the agreed abstraction regime is maintained.

Due to the seasonal variations in flow maximum abstraction will often only be achievable for 25% of any year. High head turbines maintain good efficiencies down to about 10% of their maximum design flow, because of this the seasonal flows mean that typical high head hydro scheme will not produce significant levels of power for about 20% of any year.

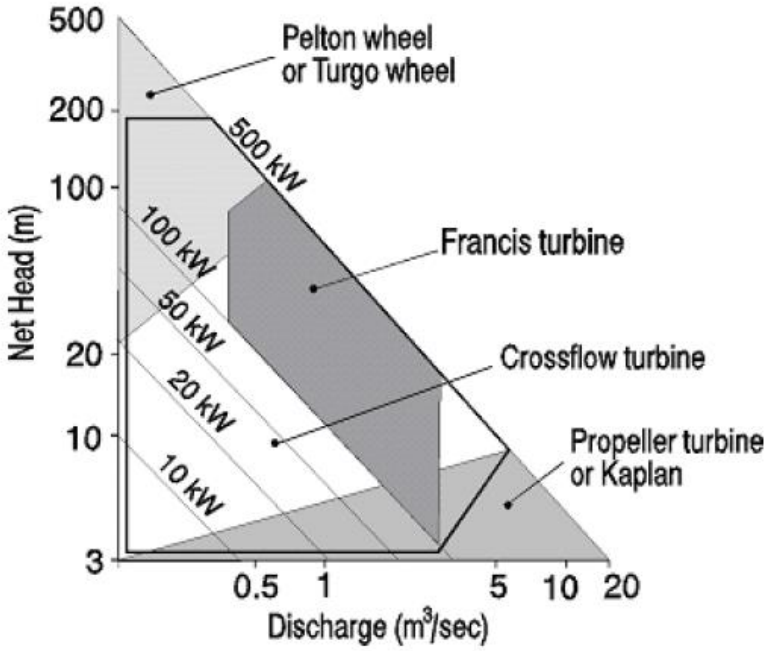
Types of hydro technology

There are several types of turbines that are used or have been used for hydroelectric generation each is adapted for conditions of flow or generation requirements. These are broadly split into two groups: Impulse turbines and Reaction turbines.

Impulse turbines rely on the speed of the water, generated by the hydraulic head - to move the wheel and are commonly used for high head hydroelectric systems.

Reaction turbines on the other hand rely on the weight of the water to move the wheel and are generally used for low head systems.

This diagram can be used to choose the appropriate turbine type once the basic flow and head data is available.



The most common turbine type used in high head hydropower installations is a *Turgo* or *Pelton* wheel. These maximise the kinetic energy transfer from the water to the wheel leaving the water drained of the kinetic energy, exiting the system very slowly. For full information and descriptions of these different turbine types please visit the British Hydro association website. The British hydro association has also published a useful guide to micro hydro.

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RHONDDA CYNON TAF

RHONDDA CYNON TAF COUNTY BOROUGH COUNCIL

CLIMATE CHANGE CABINET SUB-COMMITTEE

23rd March 2023

PROPOSED SOLAR FARM

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

Author(s): David Powell, Director of Corporate Estates, and Anthony Roberts, Head of Energy & Carbon Reduction.

1. PURPOSE OF THE REPORT

1.1 The purpose of the report is to provide a further update to Members with regards to the work underway in the development of a 'Land Based Solar Farm', to be located on Council owned land located at Coed Ely, on an 84-acre 'terraced' former colliery site, near Tonyrefail. The facility will, when constructed, be an asset owned by Rhondda Cynon Taf County Borough Council.

2. RECOMMENDATIONS

It is recommended that Members:

2.1 Note the contents of this report as part of the ongoing work in response to our climate change ambitions and agree to the further progress of the project proposals, in line with the contents of this report.

2.2 Receive further report(s) to provide updates on progress as/when deemed appropriate.

3. REASONS FOR RECOMMENDATIONS

3.1 The contents of this report provide key information updates on the proposal where the Council has plans to build and finance a credible solar farm, that will make a vastly significant contribution to the Council's

ability to offset its Carbon Footprint, and towards achieving its Net Zero Carbon target.

4. BACKGROUND

4.1 Previous reports have described the ongoing work to investigate the potential of using RCT owned land for the development of major renewable energy projects for both wind and solar generation, including proposals developed with the assistance of the Welsh Government Energy Service (WGES). This project will be primarily developed by the Council and as such would both contribute to the increase in the renewable energy provision and carbon reduction/offsetting in the area, whilst also making a positive, long term, economic contribution to the financial situation of the Council, for the benefit of citizens.

4.2 The project is described as a 6MW Solar Farm, comprising a 5MW array (at 33kV) connected to the National Grid, and also a 1MW array (at 11kV) to be connected to a 'public sector' partner, via a private wire arrangement.

4.3 The project has the potential to generate a long-term income for the Council, over and above the term cost of financing and/or operating the scheme and can provide a substantial financial benefit once the said term has passed. The project will also 'offset' around 55,000 tonnes of Carbon over the expected 35yr 'minimum' lifecycle of the project, as explained in more detail in section 8.

4.4 Consent was granted by Cabinet, following the presentation of the previous reports in March and October 2022, to proceed with the proposals and permission was given to move plans forward, as described therein.

4.5 In September 2022 the Council appointed a Project Manager to take the project through to the Planning, Detailed Design and Construction Stages, a process that also involved updating the project timeline and a review of the budget. These activities all took place during the third quarter of fy'2022/23, together with some other key project milestones, and we are now able to provide further details on, as described below.

5. UPDATED PROJECT INFORMATION

5.1 A specialist company were commissioned to produce an outline design of the solar farm, using innovative solar design techniques. The purpose of the exercise was to assess the extent of the available land that would be needed to achieve the stated output targets (*referred to above*) whilst considering the geography of the proposed site. The specialist company were also asked to produce a high-level cost profile of their proposals and to provide a detailed prediction of energy 'yield', both of which could then be used to inform future expenditure and income predictions.

5.2 Following the receipt of this information, Officers were able to revise both the initial budget needed and programme/timeline for the project

proposals. The information also enabled discussions to take place with specialist consultants to assess the requirements for taking the project to the next stage of development, and through the planning process.

5.3 Following a brief consultation period, a tender process was undertaken, in conjunction with our Procurement colleagues, and a consultant was selected to help take the project forward through the Planning process. At the time of writing, the 'Activity Schedule' for the Project is currently in the process of being formulated, which will then allow Officers to update the project timeline.

5.4 The project team is also currently collating information with a view to submitting a Pre-planning Application Consultation (*PAC*) in early summer of 2023. Following this it is anticipated that a planning application will be submitted, and if successful, it is expected that construction will be able to start during 2024.

5.5 Officers and our lawyers are working on the conclusion to the Heads of Terms for the private wire connection arrangement and Power Purchase Agreement (*or Offtake Contract*) with a potential 'public sector' partner. The Council has signed a Non-Disclosure Agreement regarding this sensitive matter and so no further details regarding this aspect of the project can be made public. However, it is anticipated that the related 'private wire' element of the Project will need to be completed during the Summer of 2024, to coincide with completion of the A4119 road scheme.

5.6 Negotiations are ongoing with the local Farmer, who is a Tenant and has access to/over the land with grazing rights, regarding the future management of the land on which the solar farm is to be built. It is hoped that the Tenant will be able to make a positive contribution to the future running of the Council's proposed asset.

5.7 Both the development costs and the headline estimated figures for the capital cost of the project have now been updated (*refer to section 10 below*) to take account of the latest project information and inflation since the previous initial budget proposals were compiled. However, it should also be noted that the current economic situation with the unstable economy, high inflation and volatile energy costs means that it is likely that regular updates and re-assessments will be needed.

5.8 Periodic updates will be provided to Members during the progress of the project and further approval will be sought at each notable stage of development (*also refer to 10.4 below*).

6. EQUALITY AND DIVERSITY IMPLICATIONS / SOCIO-ECONOMIC DUTY

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

7. WELSH LANGUAGE IMPLICATIONS

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

8. CLIMATE CHANGE IMPLICATIONS

8.1 The intent of this report is in furthering the ambitions for the Council's Climate Change Agenda.

8.2 As previously reported, the project has the potential to 'offset' over 1,500 tonnes of carbon per-annum and around 55,000 tonnes over the expected 35yr 'minimum' lifecycle of the project (*figures calculated using currently published carbon conversion factors*).

9. CONSULTATION / INVOLVEMENT

9.1 There are no consultation requirements at present with regard to this supporting report.

10. FINANCIAL IMPLICATION(S)

10.1 Development costs for the project for the current financial year 2022/23 are estimated to be within the region of £145k and these costs have been met from within existing budgets.

10.2 There will be a need to allow for further development costs in fy'2023/24 which are estimated to be in the region of £400k, also met from existing budgets. This figure also includes for planning application charges and SAB fees that will be payable to service areas within the Council.

10.3 As mentioned in 5.7, the initial budget estimate for the full development and construction costs for the entire project have been reassessed, in the light of all the additional information we now have available and considering current market conditions, etc., the estimated budget now stands in the in the region of £8.5million, a figure that includes all identified development costs and allowance for the provision of the private wire installation.

10.4 As stated in item 5.7 all costs will be subject to periodic review, and then reported on at each notable stage of development. It is anticipated that the project will be mainly funded by use of Prudential Borrowing, with the annual income from the energy generation being sufficient to cover the annual borrowing repayments and the ongoing annual costs and maintenance commitments of the asset. This is subject to a full project report and business case being presented to Cabinet and, if approval is then given, a further report to Council to obtain the Prudential Borrowing approval.

10.5 It should be noted that despite the recent rises in the cost of borrowing, Officers are continuing to monitor the availability of grant funding to help with the cost of developing the Solar Farm. In support of this an application has recently been submitted for £75k worth of grant

development funding towards the expenditure in the financial year 2022/23 and if this endeavour is successful, it will result in covering over 50% of the development costs for this financial year.

10.6 It is hoped that the availability of grant funding in assisting the development of the project, together with the increased wholesale market prices in energy costs, will mean that the project model can show an increasingly favourable payback period. However, this situation will be fully advised when the final budget/income review is assessed, prior to submitting the business and funding case report.

11. LEGAL IMPLICATIONS *OR* LEGISLATION CONSIDERED

11.1 There are no legal implications aligned to this report, at this stage.

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

12.1 The purpose of the report is to provide an interim update report relating to the work of the Climate Change Cabinet Sub Committee with regards to the work underway on the development of key renewable energy projects and certain other related issues. Any future actions that arise because of the recommendations of the Climate Change Cabinet Sub Committee report will be considered by the Council's Cabinet and it will take full regard to the seven national wellbeing goals.

13. CONCLUSION

13.1 This report provides a key update on the proposals for a Solar Farm, which is one of the areas of work covered by the Climate Change Cabinet Sub-Committee. It provides an update on the proposal where the Council has plans to build and finance a credible land based solar farm, as previously reported in October 2022.

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