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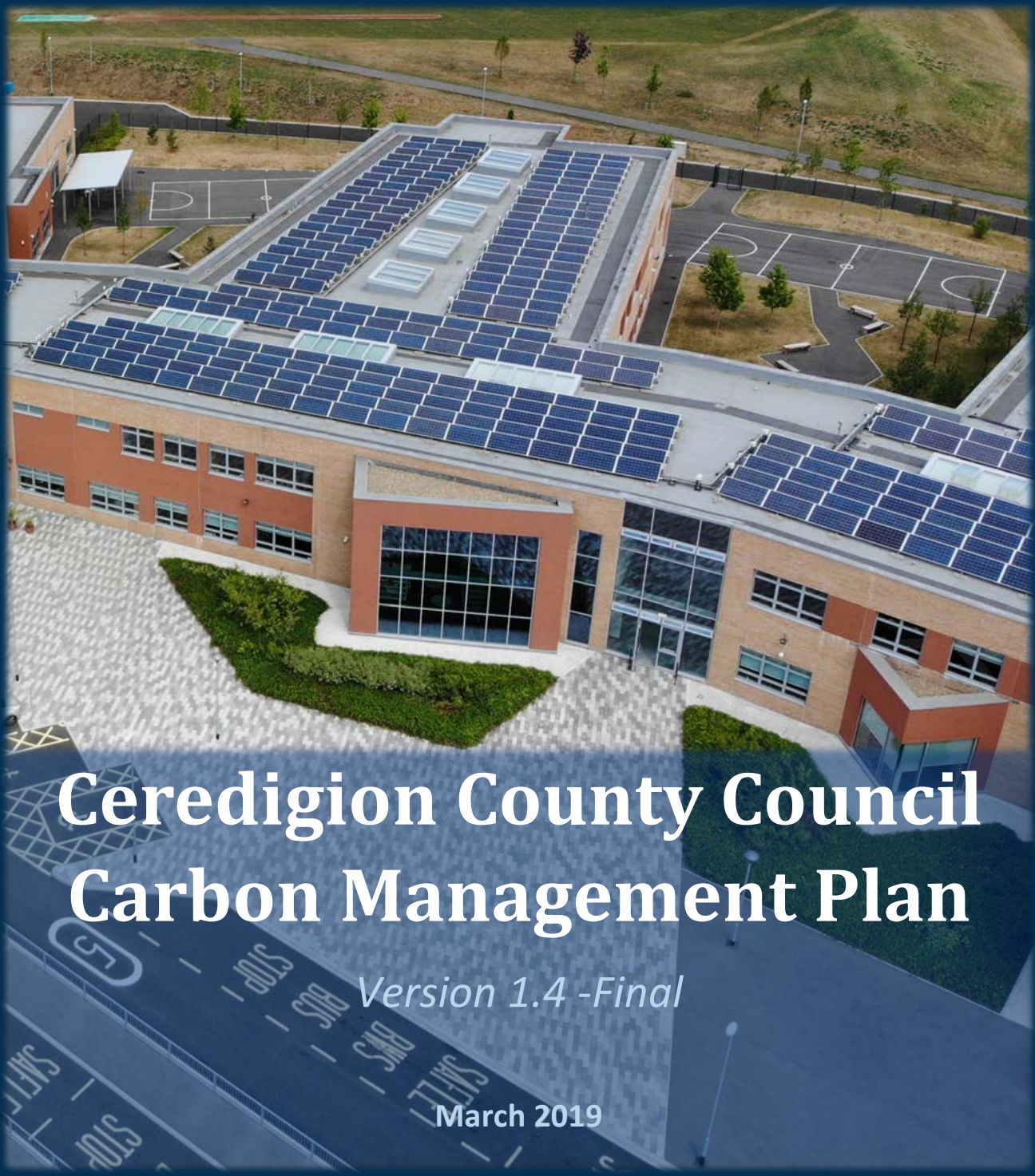

Ceredigion County Council Carbon Management Plan

Version 1.4 -Final

March 2019

The Carbon Trust's mission is to accelerate the move to a sustainable, low carbon economy. It is a world leading expert on carbon reduction and clean technology. As a not-for-dividend group, it advises governments and leading companies around the world, reinvesting profits into its low carbon mission.

Ceredigion County Council recognises the importance of climate change and the long-term impact that it will have both on communities and on the environment. As a 'responsible' organisation, Ceredigion County Council is committed to reducing its' carbon footprint, which with benefit both the Authority and the wider community through reduced CO_2 emissions and also energy cost savings.

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Foreword from Ceredigion County Council

Climate change is the biggest challenge facing humanity and carbon dioxide is one of the main contributing causes. We recognise the scale and speed of climate change, and its potential adverse effect on our economy, environment and local community. Therefore as an organisation operating within the heart of Wales, we are delighted to endorse this Carbon Management Plan.

As a result of our two previous carbon management plans over the last 10 years, we have already significantly reduced our CO_2 emissions. As an integral part of our vision for the future, Ceredigion County Council is committed to developing sustainable practices that will continue to demonstrate our commitment to reduce carbon emissions and remain efficient and effective in our operations.

Ceredigion Council is committed to playing its full part in helping to prevent climate change. As a local authority responsible for providing services for 73,000 residents, many with a high environmental awareness, we believe it is our duty to set a strong example to both our own population and to other public sector organisations. We are therefore committed to reducing and minimising greenhouse gas emissions in all our activities.

Our last five year plan exceeded expectations by reducing the Council's carbon output by 21.15% over the lifetime of the Plan. We now hope to reduce our emissions further with this new plan for the next five years. We know that our residents expect no less.

We are indebted to the Carbon Trust for their expertise in helping us put this plan together.

Alun Williams,

Ceredigion County Council's Sustainability Champion

Foreword from the Carbon Trust

Cutting carbon emissions as part of the fight against climate change should be a key priority for public facing organisations around the world. The need to bring down carbon emissions to prevent global temperature increasing by more than two degrees over pre-industrial averages is now urgent. Taking action in these areas is necessary to bring about a successful and prosperous low carbon transition. A clear mitigation strategy for Ceredigion's own estate and operations is crucial part of this process - it helps to save money on energy, whilst also allowing the Ceredigion to lead by example in reducing the risk of dangerous climate change.

Ceredigion County Council (CCC) worked with the Carbon Trust in 2018 in order to develop their carbon management (2018-2023). This Carbon Management Plan commits CCC to a target of reducing CO_2e by 15% between 2018 and 2023, and underpins potential gross financial savings to the organisation of £450k/year over this period.

There are those that can and those that do. Public bodies can contribute significantly to reducing CO_2e emissions. The Carbon Trust is proud to support CCC in their on-going implementation of carbon management and climate action planning.

Ricard Rugg,

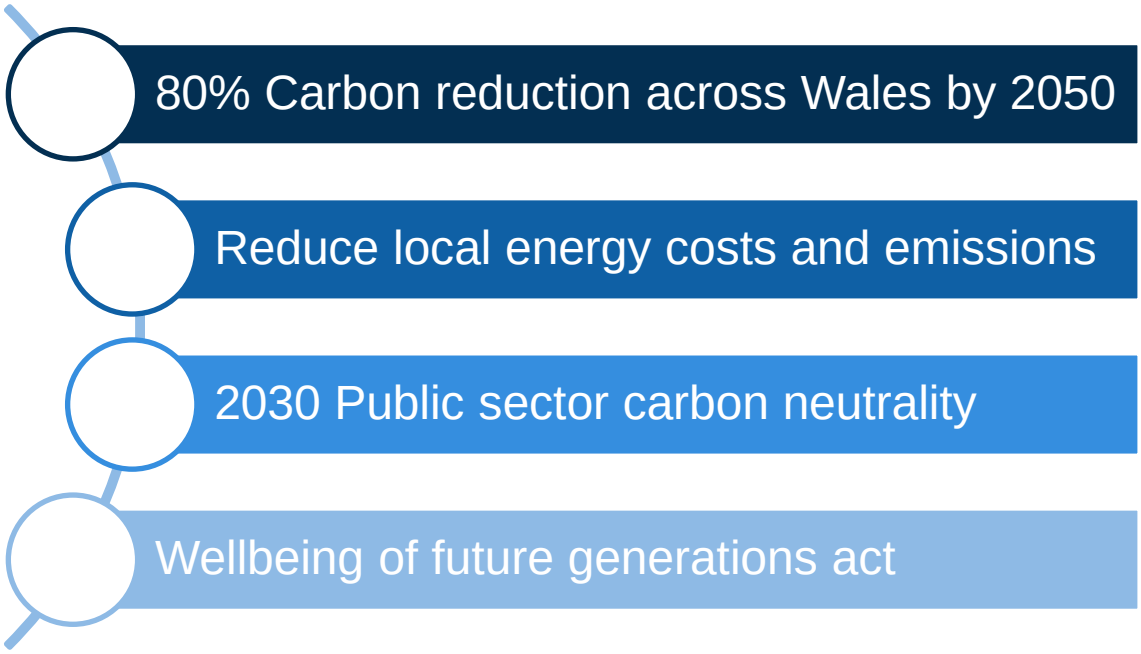
Director of Programmes & Innovation

The Carbon Trust

Executive Summary

This Carbon Management Plan sets out our strategy and action plan for reducing carbon emissions over the next five years. It identifies both the tangible and intangible benefits of Carbon Management and describes the governance arrangements to keep the programme on track. Ceredigion County Council (CCC) has already implemented many successful carbon management initiatives in the previous five year plan and we will continue to build on this success.

There is a range of reasons for CCC to take action on carbon. These include; contributing to Welsh, UK and international carbon reduction targets, setting an example by leading the way amongst public sector organisations, acting on behalf of our residents who will suffer the effects of climate change, adapting to the negative effects of climate change and creating cost savings to better enable us to maintain services during this time of austerity. The following specific drivers in Wales are also key:



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In 2017/18 Ceredigion County Council spent £3,505,512 on energy and emitted 8,649 tonnes of CO_2. These emissions are generated when we use diesel [17%], petrol [8%], LPG [7%], gas [16%] and electricity [41%] for heating, lighting, transport and to power equipment. This baseline figure also includes the use of biomass and kerosene, which are important for heating and energy generation in more rural locations where a grid connection is not available.

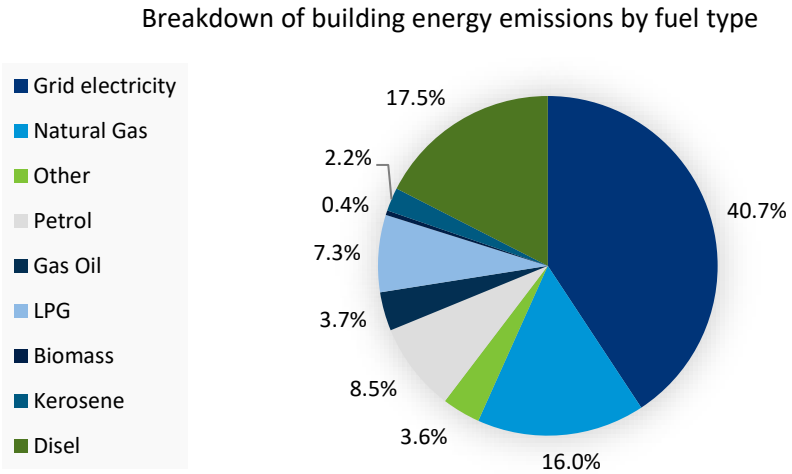
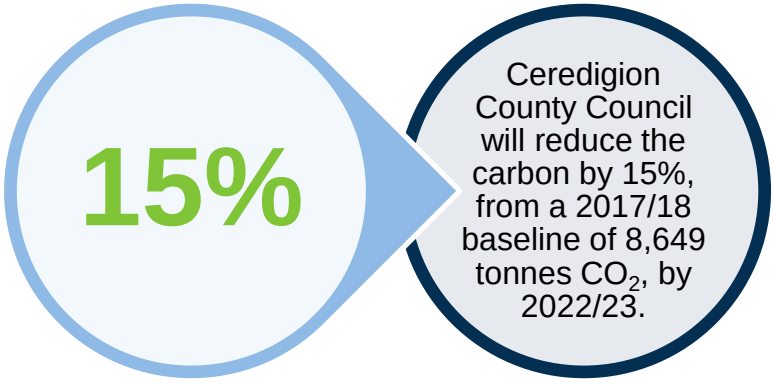


Figure 1: Baseline carbon emissions by fuel type

As a result of previous carbon management plans, our annual emissions have decreased by 45% from 15,820 tCO_2 in 2007/8. The last 5-year plan resulted in a reduction in emissions of 21.15%.

In order to continue this progress we have now set another ambitious carbon reduction target, supported by the concrete technical projects and embedding actions set out in this plan.



We have identified carbon reduction projects and activities in the following areas:

- Energy efficiency: the roll out of energy efficient measures in public sector owned buildings. This will build on a substantial amount of previous work already undertaken by Ceredigion County Council. Work will involve the installation of new more efficient boilers, lighting and other equipment.
- Street lighting: New, energy efficient, LED street lighting to be rolled out across the Council's streetlights.
- Generation: Small and medium scale solar photovoltaic (PV) and wind projects - in addition to those undertaken as part of the last 5-year plan - will further reduce the reliance on more carbon intensive grid electricity.

- Clean heating: Potential plans for additional new biomass fired district-heating schemes in several areas, and improved heating systems in schools across the region.
- Transport: More energy efficient Council fleet vehicles, with the potential for an electric vehicle pilot scheme.

The projects identified in this plan have the potential to reduce our emissions by 1,519 tonnes CO_2 annually and achieve our targeted 15% reduction measured against the 2017/18 baseline. However, by accounting for a business as usual increase estimate of 441 tCO_2 we must aim to identify a further 219 tCO_2 of saving over the lifetime of the plan.

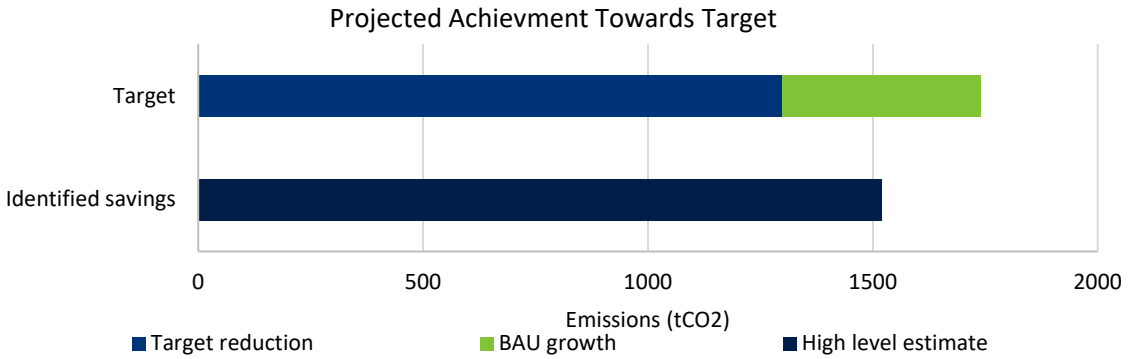


Figure 2: Predicted project performance against target and BAU

The total investment to implement identified projects is estimated at a minimum of £6,863,561. The identified projects will deliver an annual saving of approximately 1,519 tonnes CO_2 and £448,847 with an overall simple payback period of at least 15.3 years.

To deliver this plan, a project management team and governance structure has been set up within the Council to ensure successful implementation. A carbon reduction, energy and asset has overall accountability for the delivery of this plan and the achievement of our targets.

Introduction

Ceredigion County Council (CCC) has prepared two previous 5-year carbon management plans to great success, with a resulting 45% reduction in annual emissions from 15,820tCO_2 in 2007/08. This work has resulted in emission reductions across all areas under the Council's control. Furthermore, our proactive approach has invigorated climate action in areas outside of our direct control. For example, Ceredigion frequently has the highest recycling rates in Wales.

This Carbon Management Plan (CMP) summarises the results of the work undertaken in partnership with The Carbon Trust and sets out the action that we will take over the next five years to reduce our carbon emissions and costs.

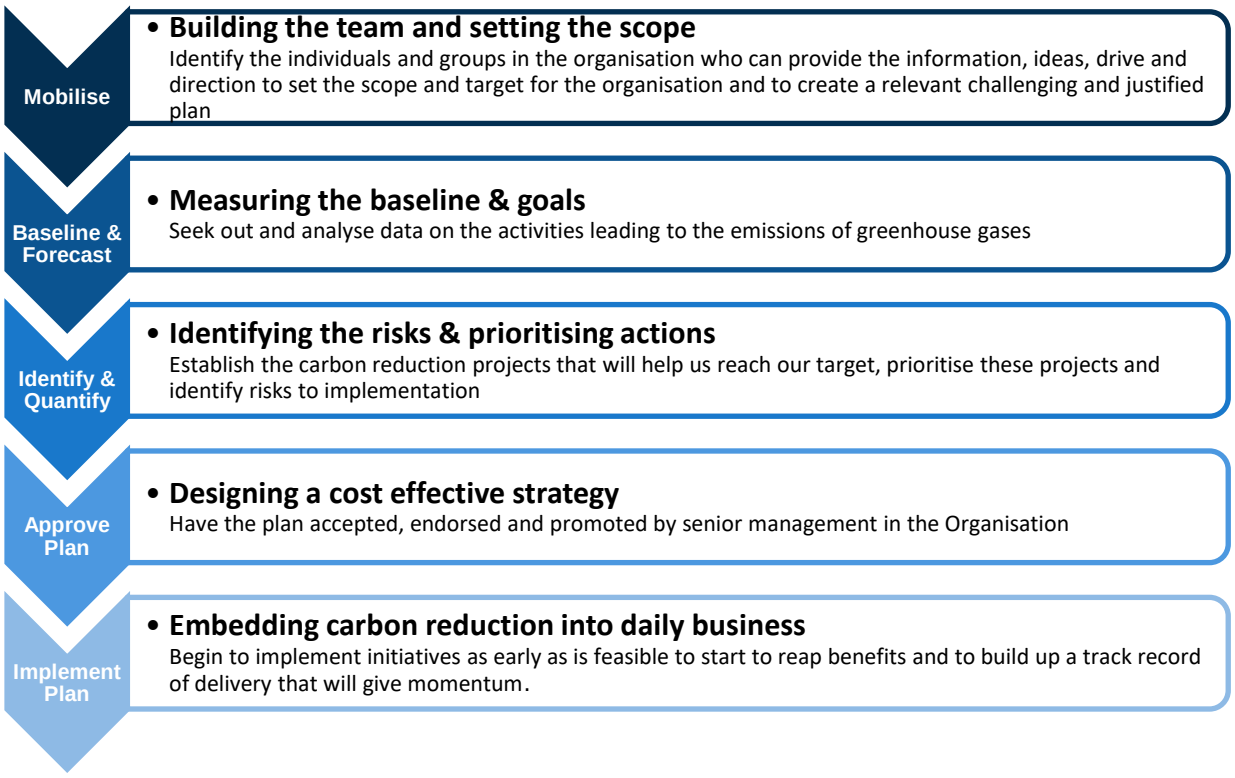
The previous CMP was written in 2013, based on a 2011/12 baseline, and set out a five-year strategy to take Ceredigion County Council through to 2016/17. A 15% target was set from a baseline of 12,442 tCO_2 in 2011/12, and sought to save a cumulative £2.7 million over the lifetime of the plan.

The document highlights the sources of our carbon emissions, sets out our baseline figures for 2017/18, establishes a target to reduce emissions from this baseline and sets out a timetable of actions to achieve this over the period. It also details the key internal management arrangements and reporting mechanisms that will be used to maintain the programme's presence and influence within our corporate structure.

The benefits of a Carbon Management Plan are:

1. Reduce costs of energy, water and fuel use
2. Demonstrate leadership to our partners and local community
3. Protect the environment and limit our impact on climate change
4. Comply with legislation such as carbon reduction targets for the Welsh public sector

The programme commenced in November 2018 following a five-step process as outlined below:



1. Carbon Management Strategy

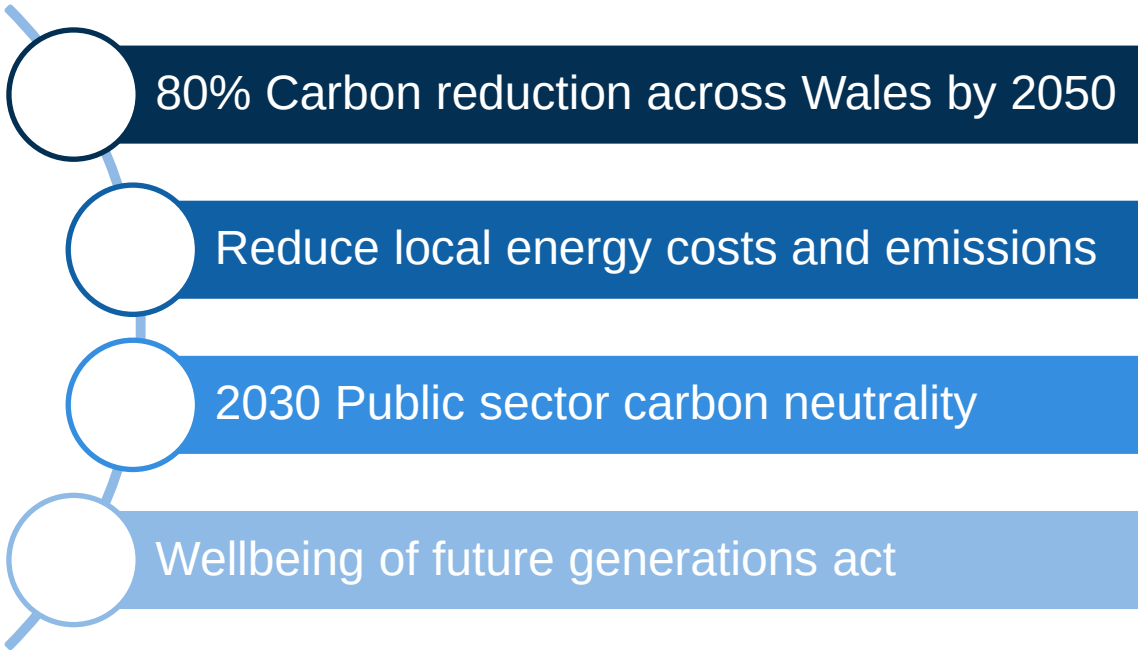
1.1 Our drivers and priorities for reducing carbon emissions

Climate change is recognised globally as the greatest long-term environmental and economic threat faced by national governments and humanity as a whole. CCC is determined to play a full part in delivering on our collective responsibility to reduce carbon emissions. The rising cost of energy also creates a shorter-term opportunity to create financial savings through energy efficiency actions.

Over the past century, human activities have released large amounts of greenhouse gases, such as carbon dioxide (CO_2), into the atmosphere. The majority of these emissions have come from burning fossil fuels to produce energy, although industrial processes, deforestation and some agricultural practices also emit greenhouse gases into the atmosphere. These gases trap more heat in the Earth's atmosphere, leading to an increase in global temperatures. A warming planet will lead to a variety of mainly adverse effects on natural systems, causing increases in extreme weather conditions, changing rainfall patterns and rising sea levels. The latest Intergovernmental Panel on Climate Change (IPCC) report is very clear that this will affect water supplies, agriculture, power, transport and infrastructure, as well as human health. Many of these impacts are already becoming apparent.

The UK has specific domestic and international commitments in reducing emissions of greenhouse gases. Many public sector bodies and private businesses are taking a strategic view of carbon emissions, under pressure from regulation, market forces and stakeholders. We are also subject to many of these drivers, shown in more detail below.

Ceredigion County Council recognises the significant role it can play in helping to accelerate the transition towards developing a low carbon economy. The following primary drivers for the Council are set out below:



1.2 Our low carbon target

"Our target is to reduce scope 1 and 2 carbon emissions by 15% by 2022/23"

The target of a 15% reduction in scope 1 and 2 emissions by 2023 from the current (2017/18) baseline of 8,649 tCO_2e has now been set. We are confident that the reduction can be made with the right actions and funding. Details of which can be found in the subsequent sections in this plan.

The total investment to implement identified projects is estimated at £6,863,561. The identified projects will deliver an annual saving of approximately 1,519 tonnes CO_2 and £448,847 with an overall simple payback period of 15.3 years.

2. Emissions Baseline and Projections

2.1 Scope and data sources

The globally accepted carbon accounting standard known as the World Resources Institute (WRI) Greenhouse Gas (GHG) Protocol defines direct and indirect emissions as follows:

- Direct GHG emissions are emissions from sources that are owned or controlled by the reporting entity.
- Indirect GHG emissions are emissions that are a consequence of the activities of the reporting entity, but occur at sources owned or controlled by another entity.

The GHG Protocol further categorises these direct and indirect emissions into three broad scopes:

- Scope 1: All direct GHG emissions from fuels.
- Scope 2: Indirect GHG emissions from consumption of purchased electricity, heat or steam.
- Scope 3: Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities (e.g. T&D losses) not covered in Scope 2, outsourced activities, waste disposal, etc.

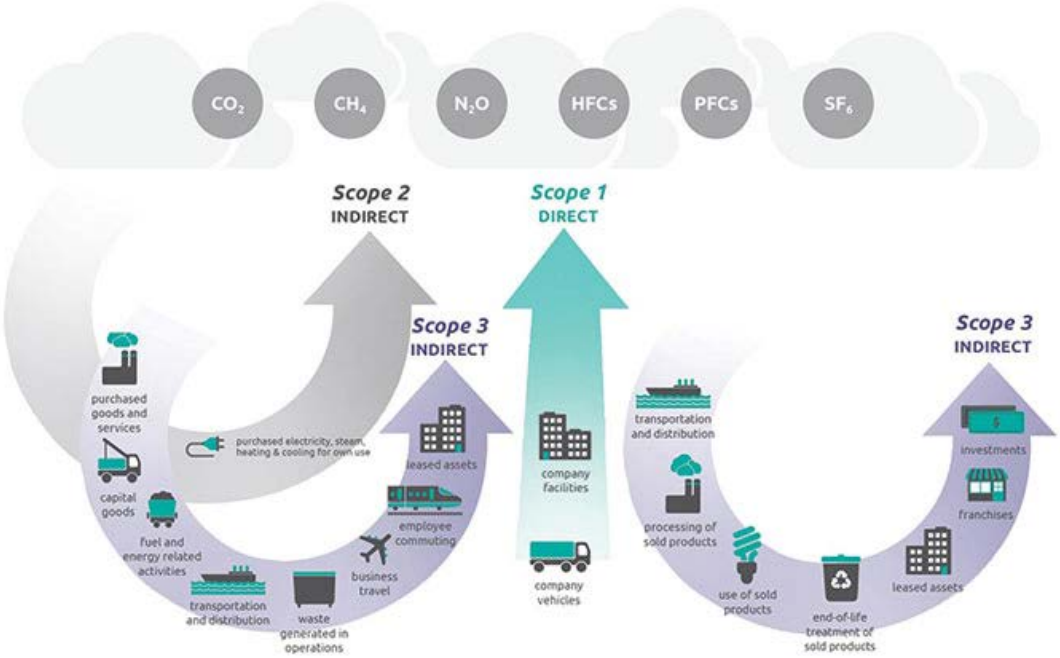


Figure 3: Overview of Greenhouse Gas Protocol scope and emissions across the value chain. Source: *GHG Protocol*

The scope of our baseline emission calculations covers: 163 sites, fleet transport and business transport. Emissions relating to waste and water were not included, because of a lack of data at the time of collection, however there might be scope to cover these in subsequent carbon management efforts.

The emission sources we have included in our baseline are listed below, divided into Scopes 1, 2 and 3, in accordance with the GHG Protocol standard. The emissions volumes identified are approximate, and limited by the accuracy and completeness of available data.

Emissions sources included in baseline scope	Data Sources and quality
Scope 1 - includes all direct emissions from sources directly controlled by CCC - fuels consumed on site and from owned vehicles	
• Fuel use in buildings and estates (e.g. gas, LPG, biomass and oil)	Energy and utility bills
• Fleet transport emissions (e.g. petrol and diesel)	Mileage reports
Scope 2 - emissions from purchased energy produced off site.	
• Electricity consumption in buildings and estates	Energy and utility bills
Scope 3 – all other emissions	
• Business travel (public transport and staff vehicle use)	Mileage reports

Table 1: Emission sources by scope and their data source/quality

2.2 Baseline year

We have chosen 2017/18 financial year as our baseline year. The emissions reported below have been produced over the 12-month period from April 2017 to March 2018. The following table identifies emissions sources relevant to our Plan's scope.

	Buildings	Transport	Waste & Water	Total
Baseline CO_2 emissions (tonnes)	6,091	2,558	0	8,649
Baseline Cost (£)	£1,751,119	£1,754,393	£0	£3,505,512

Table 2: Breakdown of baseline CO_2 emissions for 2017/18

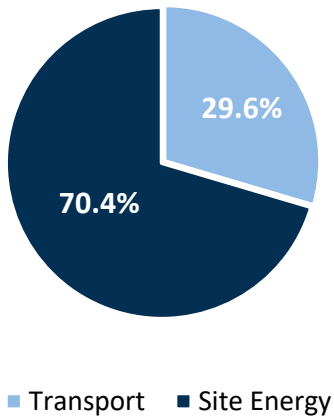


Figure 4: Breakdown of carbon emissions by source

From figure 3, it is possible to see that the majority of emissions from Ceredigion County Council are a result of stationary sites (buildings), which include schools, libraries and leisure centres but also street lighting. This also includes emissions from all fuel sources, including electricity, natural gas, biomass etc. primarily used for heating and hot water purposes.

Transport emissions contribute just under a third of the Council's total. These are a combination of emissions directly from the Council's fleet but also scope 3 emissions relating to business travel using third party transportation.

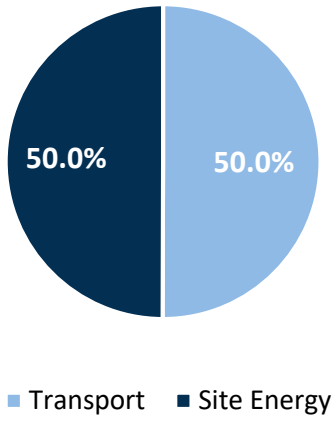


Figure 5: Breakdown of carbon related costs by source

Figure 4 details the associated costs of the energy that produced the emissions in figure 3, also broken down by user of that energy/producer of emissions. There is a significant difference between the two figures, with costs from transport and stationary sites being near identical. This reflects the higher costs per unit of carbon emission produced for transport.

2.3 Projections and value at stake

£2,412,663

The potential cost to Ceredigion County Council of taking no action on carbon reduction, compared to achieving the target in this plan, is a cumulative sum of extra costs of £2,412,663 by 2022/23.

The business-as-usual (BAU) scenario shows the calculated growth in carbon emissions and related costs that CCC would experience if we do nothing to reduce consumption. If we do nothing, our emissions are likely to increase over time, as our activities become more energy intensive. The BAU scenario therefore includes assumptions on how our consumption might increase and what increases in energy tariffs we are likely to experience:

BAU Increase in demand for all stationary sources, 0.7%, source DBIS

BAU increase in demand for Fleet, 0.7%, source DBIS

BAU increase in demand for Commuting, 1%, source 2010 and 2013 internal commuting survey

The reduced-emissions-scenario (RES) or target reduction line in figures 4 & 5 show what the yearly carbon emissions would be if we hit our target and what the yearly energy costs would be.

The Value at Stake (VAS) is the year-on-year difference between the BAU and RES scenarios. The Value at Stake shows us the potential savings, or avoided cost, from implementing our plan and hitting our target against the alternative of doing nothing (BAU). The capital costs of projects required to meet the target are not included. The Value at Stake is a useful high-level analysis, as it can be produced early on in the process of developing the carbon management plan and helps make the case for action.

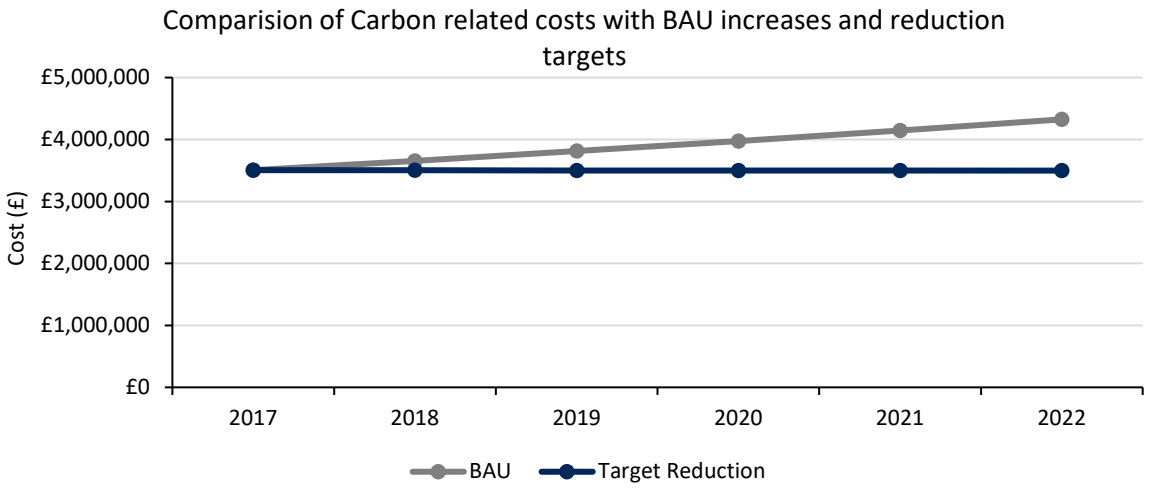


Figure 6: Comparison of carbon related costs with BAU increases and reduction targets

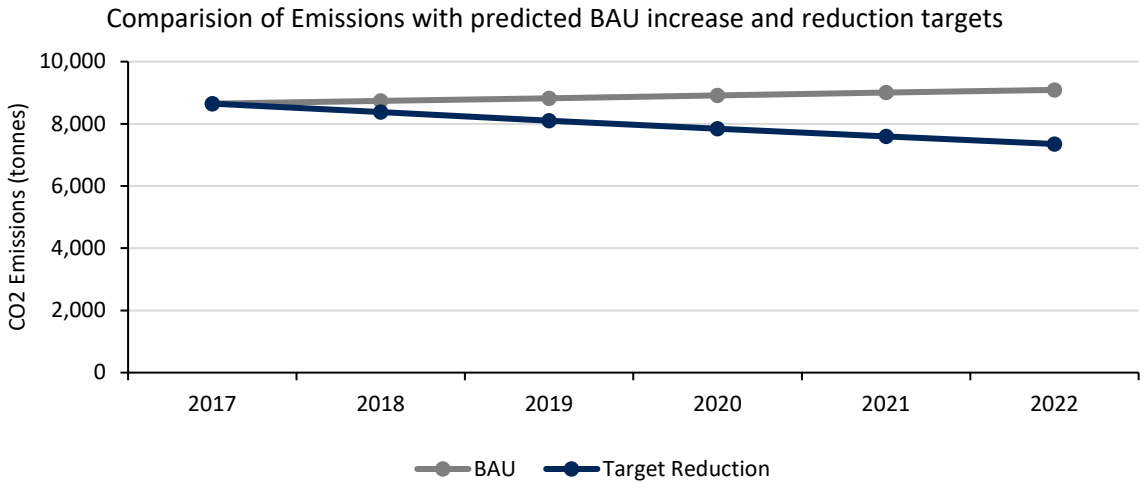


Figure 7: Comparison of emissions with predicted BAU increase and reduction targets

Under the BAU scenario, our energy cost could rise from its current £3,505,512 to £4,325,367 by 2022/23. Our BAU emissions are projected to increase from 8,649 tonnes to 9,091 by 2022/23. This equates to a cumulative value at stake of £2,412,663 over five years. These future cost and emission values are based on the following annual percentage changes assumptions: BAU consumption will increase by 1%, inflation by 3% and utility prices by 4%.

3. Carbon Management Projects

3.1 Carbon Management Projects

Key Points

- To implement the projects defined in this plan it will cost £6,878,561 over the five years of the plan.
- Some of the funding sources have already been identified.
- When all these projects are implemented, it will result in an estimated annual financial savings of £448,847.
- The average payback period of projects in this plan is 15.3 years. However, the majority of the funding will be recovered in less than nine years.

This section of the plan lists and prioritises the opportunities identified for carbon emissions savings and sustainable practices that are critical to ensuring CCC achieve the five-year reduction target. The projects were identified through a number of means including Refit analysis, street lighting assessments, energy audits and project ID workshops. We then quantified the projects to understand the cost and benefits of each of them. A Carbon Management Projects Register will be maintained by Ceredigion County Council to record, quantify and evaluate projects on an ongoing basis.

The projects have been split into the following sections:

> Building: all projects relating to efficiency measures, and other changes made to buildings, including their energy and heating supply.
> Property rationalisation: projects where buildings will be removed from the Council's list of owned assets.
> Other sites: primarily ongoing projects relating to street lighting.
> Renewables: potential opportunities have been identified as a case for the Council to consider as opposed to already identified projects.
> Transport: this includes projects related to the business and fleet usage.

3.2 Project register

This section (table 3) includes projects that are already underway, planned or proposed since the baseline year, summarised by category, details of each project can be found in Appendix 1. Furthermore a breakdown of individual sites within the majority of these projects/project categories can be found within Appendix 3.

Project Category	Capital (£)	Annual energy cost saving (£)	Annual carbon saving (tCO_2e)	Average Payback (years)	% project contributes to meeting target
Property Rationalisation	£-	£31,270	139	0.00	11%
Renewables	£2,759,000	£239,498	885	11.46	68%
Transport	£2,227,861	£13,568	28	164.20	2%
Buildings	£1,021,500	£101,160	289	10.10	22%
Other Sites	£869,200	£63,351	179	13.72	14%
Total	**£6,878,561**	**£448,847**	**1,519**	**15.3**	**>100%**[1]

Table 3: Project category summaries

3.3 Projected achievement towards target

The figure below shows predicted business-as-usual (BAU) emissions and the target emissions. Figure 6 subsequently shows the emissions reductions from implementing all the projects identified in this plan by 2022/23. This plot takes into account the following factors:

- **The effect of BAU forces:** so for example, if in year three no additional projects were implemented, the emissions would then trend back towards the BAU line.
- **The impact of project life:** the nature of the project determines how long its impact may be felt. If a short life project is finished (e.g. awareness raising) before the end of the programme (and not maintained or repeated) a stepwise increase in emissions would be seen.

By including these effects, we are trying to model some of the real life factors that may influence our ability to meet our target. Because of these additional factors, the plot does not directly agree with a simple summed list of the carbon saving impact of the projects.

The figure below shows how far the existing and identified (planned and potential) projects take us towards the target. If all these projects are implemented, we expect to achieve our targeted savings. We will however need to identify a further 219 tonnes of emissions savings to fill the gap to make up for the potential BAU upward drift (gap to target).

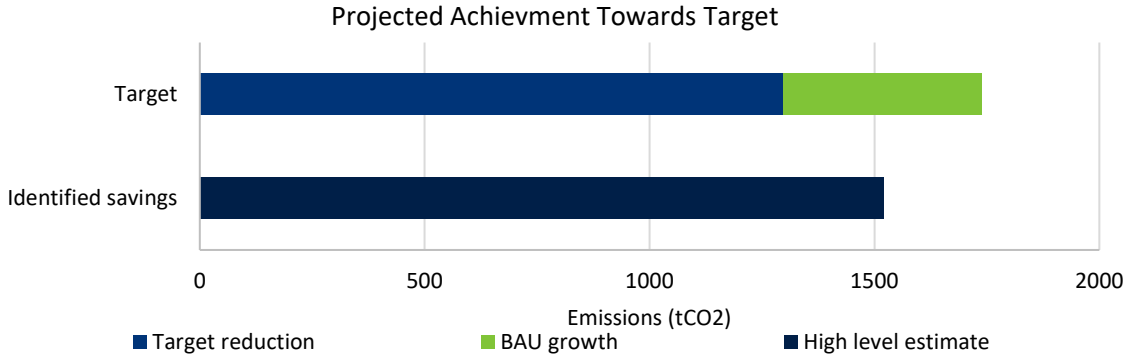


Figure 8: Carbon progress against targets

[1] Does not account for projected BAU increases in the footprint

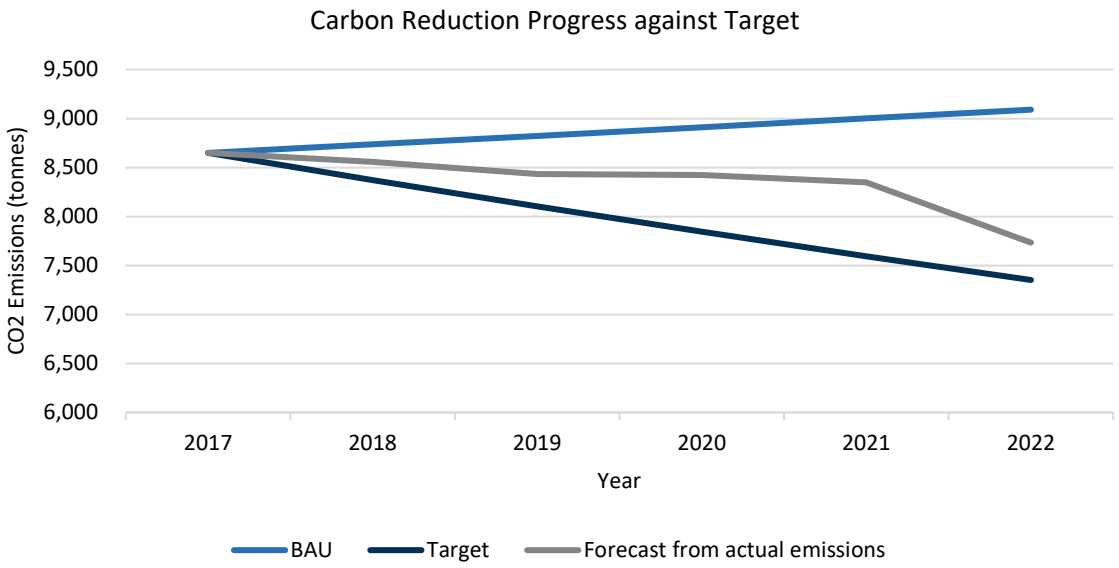


Figure 9: Carbon progress against targets

Figure 9 shows predicted business-as-usual (BAU) emissions and the target emissions. The "forecast from actual" line shows the emissions reductions from the projects scheduled in the duration of this plan. This analysis includes the effect of BAU forces as stated. Additionally a degradation factor is included. This assumes that over the life of a project its carbon saving impact will decrease due to factors such as business focus being diverted to other initiatives, projects not being maintained and percentage savings becoming smaller as a building becomes more efficient.

4. Implementation

4.1 Implementation

This section covers the main elements required to move from planning to implementation. It includes our financing strategy, governance structure, monitoring and reporting mechanisms. We also describe the activities that will help us embed carbon management within the Council and drive the changes in behaviour that will lead to long-term, sustained savings and low carbon practice.

4.2 Finances

The value at stake shows that over the next five years £2,412,663 could be saved by reaching the target. However, to achieve these savings, significant capital investment will be needed. The project register tool that accompanies this plan contains the calculations to assist with the selection of carbon reduction projects.

To implement the projects defined in this plan will cost £6,878,561. £3,440,561 of funding has already been sourced, with £3,453,000 still to be achieved. When all these projects are implemented, it will result in an estimated maximum annual financial savings of £448,847. The overall payback period of projects in this plan is 15.3 years.

4.2.1 Capital Costs

The table below summarises the total capital costs for our Carbon Management Plan by year. These figures include only the upfront cost of the project and do not include any operation or maintenance costs.

Project Year	2018/19	2019/20	2020/21	2021/22	2022/23
Total Costs	-£884,200	-£2,646,361	-£404,000	-£744,000	-£2,200,000

Table 4: Year by year capital costs

The cost of implementing the projects in this plan has been estimated at £6,878,561 by 2023, of which £3,440,561 has already been allocated from existing capital budgets. The sources to fund the remaining projects have yet to be confirmed.

We believe that our Carbon Management Plan offers a compelling and robust business case for implementation, taking into account direct cost savings to the Council, enhanced staff comfort, benefits to reputation, and the vital leadership role of Ceredigion in tackling climate change.

4.2.2 Plan costs and savings

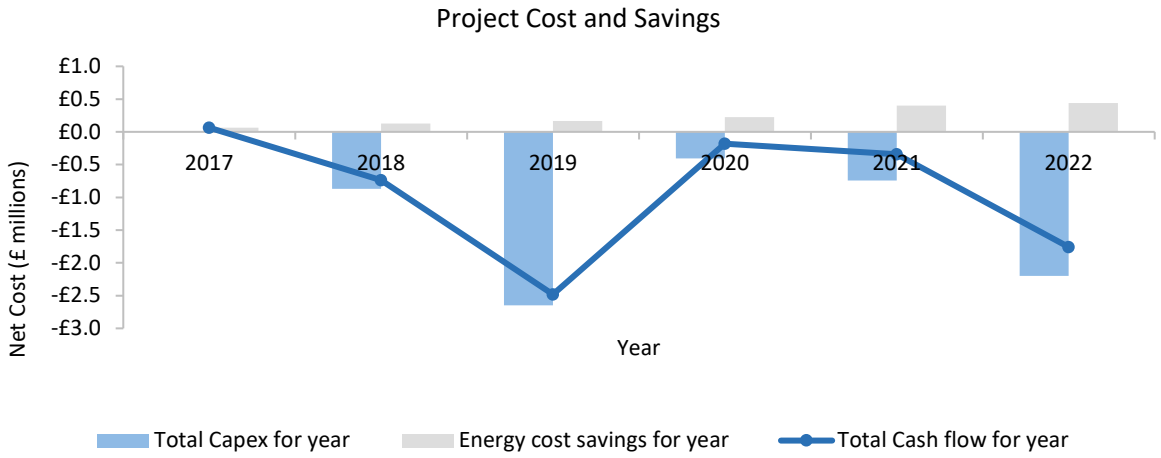


Figure 10: Project costs, savings and cash flow

If all the projects are implemented as planned it would result in estimated reduced energy costs of £448,847 per annum by 2023, based on 2017/18 prices. The overall payback period of the projects in this plan is approx. 15.3 years. Whilst this payback time is longer than the lifetime of the plan (considering implementation will not commence until late 2018/ early 2019), it reflects the duration of a substantial number of projects outlined in the plan. These projects will provide cost and carbon savings well beyond 2023 and will payback their capital investment over this longer time period.

It should be noted that the analysis in the tables included in this section does not account for inflation and all figures are shown at today's prices. If inflation were included, we would expect energy cost savings to be higher. It should also be noted that costs for certain projects scheduled for later years may also be higher for the same reason but this will not be the case for all projects – certain technologies such as LED lighting continue to reduce in cost.

4.3 Programme management of our carbon management plan

Beyond the set of initiatives identified above, it is important that organisational systems are put in place to maintain a focus on carbon management over time. This section describes the main activities we will undertake to ensure carbon management is embedded into our organisation. The Carbon Management Maturity Matrix (located in Appendix 2) provides a framework for evaluating the extent to which an organisation has embedded carbon management into its organisational culture, practices and processes. We will use this framework to guide the progress we make in this area.

Programme Governance

The Carbon Management Team (CMT) will manage the carbon management programme. The scope of the CMT is to oversee the implementation of the Carbon Management Plan so that the carbon reduction target is met within the timescales set out.

This group has a number of key functions specifically related to carbon management:

- to provide regular, strategic oversight and monitoring of progress towards our target
- to raise 'blockages' to a level where they can be removed e.g. resource issues
- to ensure that carbon management stays on the high level agenda at CCC

- to manage the expectations of key stakeholders and recognise achievements on carbon reduction

Overall organisation of the programme will fall to the Project Lead and Project Sponsor who will report project highlights, risks and issues to the CMT. The Project Sponsor will have overall responsibility to make sure the progress of the Plan is reported to senior stakeholders and that the projects within the Plan are delivered. The Project Lead, and colleagues, will focus on the day-to-day delivery of the programme projects. The CMT meet on a quarterly basis and aims to include the following representatives from the following departments:

- Street lighting
- Education
- Social Care
- Leisure Services
- IT
- Housing
- Planning
- Finance
- Fleet/Transport
- Property Services

The CMT is also responsible for implementing the projects contained within this Plan. The CMT will oversee the activity within the programme, which will be overseen by the Project Lead.

Corporate Strategy & Policy Alignment

To ensure that carbon management is established and maintained as a priority, it should be considered as part of all decision-making processes. We recognise that in order to achieve our carbon reduction target, we need to maintain a number of practices/procedures and embed a philosophy of considering carbon emissions in business as usual activities. This includes:

Change Action	Lead	Completion Date
Endorsement / sign off of this plan and the associated 15% reduction target by [senior staff]	Project Sponsor	February 2019
Publication of this CMP on the intranet and internet	Communications	June 2019
Communication & engagement on the carbon management programme to Ceredigion stakeholders	Project Lead / Communications	June 2019
All business cases submitted to financial management to be appraised for carbon reduction as well as costs & payback	Project Lead / Project Sponsor / Finance	Ongoing
Inclusion of the risks arising from not meeting our carbon reduction target included in the Corporate risk register	Project Sponsor	February 2019
Inclusion of our Carbon reduction targets in Business Plan and Annual Report	Project Sponsor	Ongoing
Review and re-alignment of all council Environmental Statements to take account of the Carbon Management Plan	Project Lead / Project Sponsor	March 2019

Development of a sustainable procurement policy to take account of low carbon procurement	Procurement	September 2019
Review of existing policies to decide where alignment with the Carbon Management Plan is relevant	Project Sponsor	September 2019

Table 5: Schedule of actions needed

4.4 Monitoring and reporting

This section describes actions we will take to improve the quality of carbon emissions data and the data gathering process, and how will we report on our progress. Robust data will provide the basis to monitor and report on the results of our actions and it will help to drive behaviour change.

Progress Reporting

The progress of the Carbon Management Plan will be discussed and reviewed by the CMT and project team. Progress will be monitored against the targets set within this plan and the KPIs set out below.

- Fuel and electrical data per month for each area and per year
- % increase/decrease carbon emissions by year
- Achievement against projected carbon savings
- Number of projects completed
- Number of projects submitted for approval and progressing towards completion.

For each meeting of the CMT, the progress of the Carbon Management Plan as a whole, as well as individual projects, will be discussed against these KPIs. It is important that we adopt a way of flagging the projects that are perhaps stalling or not progressing as expected. We will do this by using the Red, Amber & Green (RAG) risk register.

An annual report of progress towards our carbon management target will be produced and presented to the CMT. This report will provide an update on progress against the KPIs above and embedding actions included in this plan. The report will be prepared by the Project Lead and signed off by the Project Sponsor. This report will also be circulated to the wider organisation and uploaded on the Ceredigion County Council intranet.

Data Management

Effective data management has been a critical element of developing this plan. It underpins our strategy and target and it will continue to be a critical element as we monitor implementation progress. Having confidence in our figures, assumptions and data sources helps ensure that:

High priority areas are targeted: a good understanding of where our emissions are coming from will allow us to identify high emitters and prioritise projects that tackle these.

Carbon reduction projects are accurately quantified: this will allow us to predict the impact a project will have on carbon emissions and how effective our portfolio of projects will be at achieving our target.

Business / investment cases are credible and accurate: accurate estimations of costs and savings ensures that funds are used in the most cost effective way.

The effectiveness of carbon reduction projects can be measured and demonstrated: this allows progress against target to be tracked and strengthens the business case for future investment.

Continuity and succession planning is not problematic (data sources / referencing): all activities should be well documented and referenced to ensure smooth hand over of responsibility.

Stakeholder Engagement & Communication

To keep carbon management a priority in people's minds and behaviours, we need to regularly communicate with stakeholders at various levels. Effective and timely communications with our staff is an important aspect to delivering our target. We will do this by rolling out the following change actions.

Change Action	Completion Date
Develop a communications plan	March 2019
Publication of the Carbon Management Plan on the intranet and internet	June 2019
Communication & engagement on the Carbon Management Plan to Council stakeholders	June 2019
Produce a Progress Report on an annual basis for the Project Board / wider organisation	Annual
Use social media to increase awareness on environmental projects & benefits with internal & external stakeholders	Ongoing
Regular column in internal newsletter	Ongoing

Table 6: Schedule of change actions

Control of Risks and Issues

Any member of the Project Board or Project Team may raise an Issue or Risk with the Project Manager. They should be communicated verbally and confirmed in writing within 24hrs. The Project Manager will then record the Issue/Risk on the appropriate log and allocate a reference number. The Logs will be maintained with each Issue or Risk being allocated a status of either "Acknowledged", "In Progress" or "Resolved". All risks are monitored and updated in a detailed Risk Register maintained by the Project Manager.

Some of the key risks associated with the plan are set out below:

- Resources unavailable to achieve actions identified
- Reputational risk to authority for not pursuing or meeting carbon reduction targets
- Carbon management not seen as a strategic priority
- Lack of buy-in by staff reduces participation in relevant carbon reduction projects
- Potential for a higher than predicted increase in energy demand threatening the ability to meet the carbon reduction target

Appendix 1: Project Register

ID	Project	Lead	Capital	Financial Savings (Gross)	tCO_2e	Payback (yrs)	% of Target	Start Year
1	Street Lights	TBC	£869,200.00	£63,350.50	179	13.72	13.8%	2018
A 2 year programme to convert every streetlight to LED where possible.								
2	School heating 1	TBC	£343,500.00	£20,000.75	17	17.17	1.3%	2019
Conversion of school heating systems from electric to wet (fired by natural gas or LPG) in 2018/19.								
3	School heating 2	TBC	£225,000.00	£6,596.78	5	34.11	0.4%	2020
Conversion of school heating systems from electric to wet (fired by natural gas or LPG) in 2019/20.								
4	School heating 3	TBC	£244,000.00	£3,004.57	4	81.21	0.3%	2021
Conversion of school heating systems from electric to wet (fired by natural gas or LPG) in 2020/21.								
5	Fleet renewal	TBC	£2,227,861.00	£13,567.67	28	164.20	2.1%	2019
Replacement of 16 of the most inefficient tippers/fleet vehicles with EURO 6 rated vehicles.								
6	Building rationalisation	TBC	£-	£31,270.46	139	0.00	10.7%	2019
Certain buildings no longer fall under the ownership of the council, e.g. following the completion of a new heat network programme, or construction of Area School (closure of existing) etc.								
7	Solar PV - 1	TBC	£500,000.00	£57,097.95	161	8.76	12.4%	2021
8	Solar PV – 2	TBC	£1,000,000.00	£81,000.00	229	12.35	17.6%	2022
9	Solar PV – Comins CP	TBC	£15,000.00	£1,300.00	4	11.54	0.3%	2019
10	Solar PV – YHR	TBC	£15,000.00	£1,300.00	4	11.54	0.3%	2019
11	Solar PV – Bro Pedr	TBC	£15,000.00	£3,800.00	11	3.95	0.8%	2019
Several sites to install solar PV, ranging from10kW systems to 500kW. With ‘site 2’ to have battery storage installed alongside.								
12	Penrhos Wind Turbine	TBC	£1,200,000.00	£95,000.00	477	12.63	36.8%	2022
500kW turbine to be installed, with an expected capacity factor of approximately 30%.								
13	LED Site 1	TBC	£138,000.00	£16,000.00	49	8.63	3.8%	2020
14	LED Site 2	TBC	£26,000.00	£3,000.00	9	8.67	0.7%	2020
15	LED Site 3	TBC	£30,000.00	£3,700.00	11	4.05	0.9%	2020
Various potential LED lighting schemes								
16	Penglais Boiler	TBC	£30,000.00	£1,600.00	10	18.75	0.8%	2019
Maintenance requirement to replace boiler, but some carbon savings associated with the scheme.								
17	21st Century School A	TBC	£-	£9,300.00	33	0.00	2.5%	2023
18	21st Century School B	TBC	£-	£31,817.00	129	0.00	9.9%	2023
19	21st Century School Cardigan Comp	TBC	£-	£6,141.00	22	0.00	1.7%	2020
Major, long-term and strategic capital investment programme creating educational communities that promote sustainability; reduce emissions, cost and energy consumption; and maximise resources available to them.								

Table 7: Project Register

Appendix 2: Carbon Management Matrix - Embedding

	POLICY	RESPONSIBILITY	DATA MANAGEMENT	COMMUNICATION & TRAINING	FINANCE & INVESTMENT	PROCUREMENT	MONITORING & EVALUTATION
5 BEST	SMART Targets signed off Action plan contains clear goals & regular progress reviews Strategy launched internally & to community	CM is **full**-time responsibility of a few people CM integrated in responsibilities of **senior** managers support Part of **all** job descriptions	Quarterly collation of CO_2 emissions for all sources Data externally verified M&T in place for: • Buildings • Waste	All staff given formalised CM: • Induction • Training Plan • Communications CM matters **regularly** communicated to: • External community • Key partners	**Granular** & **effective** financing mechanisms for CM projects Finance representation on CM Team Robust task management mechanism Ring-fenced fund for carbon reduction incentives	Senior purchasers consult & adhere to procurement manual & principles of sustainability comprehensively integrated in tendering criteria Whole life costing Area-wide procurement	Senior management review CM process Core team regularly reviews CM progress Published externally on website Visible board level review
4	SMART Targets developed but not implemented	CM is full-time responsibility of an individual CM integrated into responsibilities of department managers, not all staff	Annual collation of CO_2 emissions for: • Buildings • Transport • Waste Data internally reviewed	All staff given CM: • Induction • Communications CM communicated to: • External community • Key partners	Regular financing for CM projects Some external financing Sufficient task management mechanism	Environmental demands incorporated in tendering Familiarity with procurement or Joint procuring	**Core** team **regularly** reviews CM progress: • Actions Profile & Targets • New opportunities quantification
3	Draft policy Climate Change reference	CM is part-time responsibility of a few people CM responsibility of department champions	Collation of CO_2 emissions for limited scope i.e. buildings only	Environmental / **energy** group(s) give ad hoc: • Training • Communications	Ad hoc financing for CM projects Limited task management No allocated resource	Whole life costing occasionally employed Some pooling of environmental expertise	CM team review aspects including: • Policies/**Strategies** • Targets • Action Plans
2	No policy Climate Change aspiration	CM is part-time responsibility of an individual No departmental champions	No CO_2 emissions data compiled Energy data compiled on a regular basis	Regular poster/awareness campaigns Staff given ad hoc CM: • Communications	Ad hoc financing for CM related projects Limited task coordination resources	Green criteria occasionally considered Products considered in isolation	Ad hoc reviews of CM actions progress
1 WORST	No policy **No** Climate Change reference	No CM responsibility designation	Not compiled: CO_2 emissions Estimated billing	No communication or training	No internal financing or funding for CM related projects	No Green consideration No life cycle costing	No CM monitoring


CARBON
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