Renfrewshire Council

Carbon Management Plan

2025/26 – 2029/30

Environment, Housing & Infrastructure

www.renfrewshire.gov.uk

Renfrewshire Council

Contents

Executive Summary

This is Renfrewshire Council's 4th Carbon Management Plan (CMP). This CMP is a strategic document that outlines Renfrewshire Council's (including OneRen) approach to reducing its carbon emissions. The CMP includes:

- Purpose and Goals: The CMP sets out our commitment to reducing carbon emissions, aligning with our broader sustainability goals such as working towards net zero emissions by 2030.
- Baseline Emissions: It includes an assessment of the current carbon footprint, detailing the sources of emissions (e.g., energy use, transportation, waste).
- Reduction Strategies: The plan outlines specific actions and projects aimed at reducing emissions. This includes energy efficiency measures, waste reduction strategies and committing to increase the use of on-site renewable energy.
- CMP Targets and interim milestones: the CMP will include an overall reduction target. This will be calculated from planned, tangible projects with annual milestones to monitor progress within each carbon reduction category.
- Monitoring and Reporting: the CMP includes mechanisms for tracking progress and reporting on emissions reductions, ensuring transparency and accountability.
- Stakeholder Engagement: Engaging with stakeholders, including employees, school staff and pupils to ensure broad support and participation in carbon reduction efforts.

In the previous Carbon Management Plan covering 2013/14 to 2019/20, Renfrewshire Council had an aspiration to achieve a reduction target of 36%, based on the 2012/13 carbon footprint baseline. Overall, a carbon reduction of 60% was achieved.

A review and revision of the previous Carbon Management Plan, including reduction targets, would help Renfrewshire Council work towards becoming netzero by 2030. A new baseline year of 2023/24 has been set and includes OneRen. The carbon footprint for this year was calculated to be 21,505 tonnes of carbon dioxide equivalent (tCO_2e) and includes electricity, gas, water and wastewater in buildings within Renfrewshire Council & OneRen, street lighting & traffic signals, waste disposal, transport (council owned fleet) and staff mileage.

Renfrewshire Council has set a target to reduce its total annual carbon footprint by 4,962 tCO_2e by the end of financial year 2029/30, this equates to a reduction of 23% as shown in Table 1. Reductions will be achieved through a range of projects. A breakdown of the projects aimed at achieving the target can be found on page 25 of this document, with a more detailed breakdown found on the project register discussed on page 26.

	2023/24 Baseline	Unit of Measurement	2023/24 Baseline CO2 (tonnes)	Proposed CO2 Savings over CMP (tonnes)	2029/30 CMP Target (tonnes CO2)	% Reduction per Section
Electricity (buildings)	22,904,918	kW	5,161	135	5,026	3%
Gas (buildings)	57,112,219	kW	10,449	2,098	8,351	20%
Water (buildings)	248,940	M3	70	11	59	16%
Transport (Council Fleet)	1,239,684	Litres	3,091	2,573	518	83%
Street Lighting & Traffic Signals	6,090,323	kW	1,373	85	1,288	6%
Waste	57,191	Tonnes	1,259	40	1,219	3%
Staff Mileage	381,450	Mileage	102	20	82	20%
Total			**21,505**	**4,962**	**16,542**	**23%**

Table 1 – Carbon Reduction by Category

This Carbon Management Plan is viewed as a 'live' document and it is envisaged that there may be changes on an annual basis as Renfrewshire Council's estate changes and planning assumptions become a reality. This process will be overseen by the Carbon Management Plan Working Group and co-ordinated by the Energy Team Leader. A digital copy of the Plan will be available on the internet for public access.

The annual review will examine a number of areas including: progress towards overall carbon reduction target; progress with identified carbon reduction projects; financial savings achieved as a result of carbon reduction projects; wider benefits; stakeholder engagement and risk register (risk register in Appendix D. An annual update will be provided to the Infrastructure, Land & Environment Board.

Introduction

1.1. General

Renfrewshire Council began our Carbon Management Plan journey in 2002, with the second Carbon Management Plan signed off in 2010 and the third in 2014. A review undertaken indicated that the previous plan was well established, with targets set based on specifically highlighted projects with annual milestones set.

Renfrewshire Council recognises that its carbon management decisions in this current plan will have a significant impact on the organisation's ability to meet its stated reduction targets and its plan in working towards Net Zero.

1.2. Renfrewshire Council's Performance on Carbon Management

The key issues facing the organisation are changes to the operational estate. Renfrewshire Council's Carbon Management Plan Working Group will continue to take measures to adapt the Plan to any potentially significant impacts on achieving the agreed Carbon Management Plan targets. The implementation of this Carbon Management Plan aims to deliver year-on-year benefits by realising carbon and cost savings.

A project list across all operational services has been compiled to ensure the Carbon Management Plan target is achievable.

1.3. Plan Structure

This Carbon Management Plan details Renfrewshire Council's strategy for reducing carbon emissions over the next 5 years and sets out a clear timetable as well as identifying the responsibilities and internal resources required to deliver the programme.

The main objectives of the plan are:

- To continue to take a whole business approach so that carbon management is adopted as a key objective. Key stakeholders will continue to be appointed to ensure that carbon reduction is fully integrated into the organisation's culture.
- To adopt revised targets for the measurable reduction of carbon emissions and to deliver these reductions.

This plan contains the following sections:
Emissions Baseline and Projections - this details the results from the revised carbon footprint baseline and includes a clear definition on the organisation and operational boundaries applied, and the data sources and availability.

Carbon Management Projects - this outlines the carbon reduction projects currently being implemented and future planned projects, and evaluates likely success in achieving the revised reduction targets.
Management and Delivery of the Carbon Management Plan defines the management structure in place to ensure the Plan's success.

Caveats – Electricity usage – Moving to electric heating (air source heat pumps) within new build schools has resulted in an increase in electricity consumption within these buildings compared to the buildings they are replacing. In line with the phasing out of fossil fuel heating systems operating using gas, Renfrewshire Council has adopted standards to design and build new schools without the need for natural gas. In doing so, it is forecasted that the need for electricity usage in these buildings with be significantly higher than the schools they are replacing. This has been included in the electricity usage figures pertaining to Paisley Grammar, Thistle PS and the extension at Park Mains HS. The initial proposed reduction in electricity usage has been revised to reflect this.

Waste Services – The Scottish Government are due to undertake a consultation towards the end of 2026 in reference to the legislation and duties placed on Local Authorities in relation to recycling. Once the policy landscape becomes clearer, waste services will put in place a plan for Renfrewshire Council to meet these obligations. This will result in an amendment to the waste target of the CMP once the Scottish Government provide an update.

2 Carbon Management Strategy

2.1. Context and Drivers for Carbon Management

The organisation faces a complex set of drivers which set the context for carbon management. Crucially, Renfrewshire Council recognises that these cannot and should not be viewed in isolation from each other or the principle goal of continuously minimising its environmental impact whilst maximising its contribution to society and the economy.

The following list covers the key carbon drivers for Renfrewshire Council:

- Scottish Government Climate Change targets to reduce emissions of greenhouse gases and increase energy efficiency.
- Working towards Net Zero by 2030.
- Rising energy costs.
- Principle that investments in carbon reduction are generally associated with commensurate reductions in future expenditure.
- The need to eliminate waste of resources and to increase efficiency.
- The organisation's own carbon reduction targets.
- Renfrewshire's Air Quality Action Plan.

2.1.1. Climate Change

Climate change refers to long-term changes in the average weather patterns that define the Earth's local, regional, and global climates. These changes are primarily driven by human activities, especially the burning of fossil fuels like coal, gas, and oil, which release greenhouse gases such as carbon dioxide, into the atmosphere.

These greenhouse gases trap heat from the sun, causing the Earth's average surface temperature to rise. This is often referred to as global warming, which is a significant aspect of climate change. The effects of climate change include rising sea levels, melting ice caps, more frequent and extreme weather events like hurricanes and heatwaves, and changes in precipitation patterns[1].

[1] https://www.ipcc.ch/report/ar6/wg2/resources/spm-headline-statements/

2.1.2. Resources

With material scarcity and energy security becoming increasingly important priorities, a circular economy is an alternative to a traditional linear economy. In a circular economy the aim is to keep resources in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life.

We will make Renfrewshire a zero-waste society with a circular economy: minimising waste and maximising reuse, recycling and recovery of resources rather than treating them as waste.

Priority areas:

- Reduce waste at source.
- Maximise reuse, repair and recovery.
- Sustainable waste management.
- Supporting communities to reduce waste.
- Offsetting: disposal as a last resort, with local offsetting of associated emissions to compensate.

How the Council will lead and enable the transition:

- We will identify procurement hot spots within the Council's supply chains, activities and operations to maximise circular economy opportunities; optimise local supply chains; and identify areas where we can reduce carbon in the products and services we buy through innovative procurement.
- We will ensure recycling is accessible for everyone, including non-standard properties, e.g. tenements and flats, and work to resolve problem areas such as storage space, stairs, communal bins, lack of participation and fly tipping through ongoing stakeholder consultation and engagement.
- We will ensure that all Council buildings, including schools, have the facilities for the full recycling collection service and work with local businesses and commercial waste providers to identify improvement opportunities.
- We will promote sharing and repairing behaviours (including within our own operations) and work with local partners to expand existing models of sharing libraries and repair cafés and workshops.
- We will reduce the carbon impact of waste from Council operations annually per head of population, monitoring and sharing progress as well as lessons learned from initiatives which have been implemented.

2.1.3. Legislative drivers for carbon management

Scotland's carbon legislation is primarily governed by the Climate Change (Scotland) Act 2009, which has been updated several times to reflect increasing ambitions. The most recent update is the Climate Change (Emissions Reduction Targets) (Scotland) Act 2024. The key points include:

- The legislation sets a target for Scotland to achieve net zero emissions of all greenhouse gases by 2045.
- The 2024 Act introduced the concept of Scottish carbon budgets, which are set for five-year periods to ensure emissions reduction targets are met.
- Scottish Ministers are required to ensure that each carbon budget target is met.

These legislative measures are part of Scotland's broader strategy to transition to a net zero economy, ensuring a just and fair transition for all sectors of society. Figure 1 shows the key legislative drivers in Scotland.

The Scottish Government has also set ambitious sectoral actions, including:

- Heat Decarbonisation: Investing £1.6 billion over the current parliamentary term.
- Woodland and Peatland: Planting 18,000 hectares of new woodland annually by 2024 and restoring 250,000 hectares of peatland by 2030.
- Transport: Reducing car travel by 20% by 2030 and phasing out new petrol and diesel cars and vans by 2030.
- Green Jobs: Creating a Green Jobs Fund to support low-carbon businesses. Legislative instruments, such as the Climate Change Levy (CCL) have been introduced by the UK Government, designed to encourage organisations to reduce emissions. The EU Energy Performance of Buildings Directive (EPBD) was transposed into Scottish law in 2008 and has placed an obligation to evaluate energy usage for inclusion in Energy Performance Certificates (EPCs) to be displayed in all public buildings meeting certain criteria.

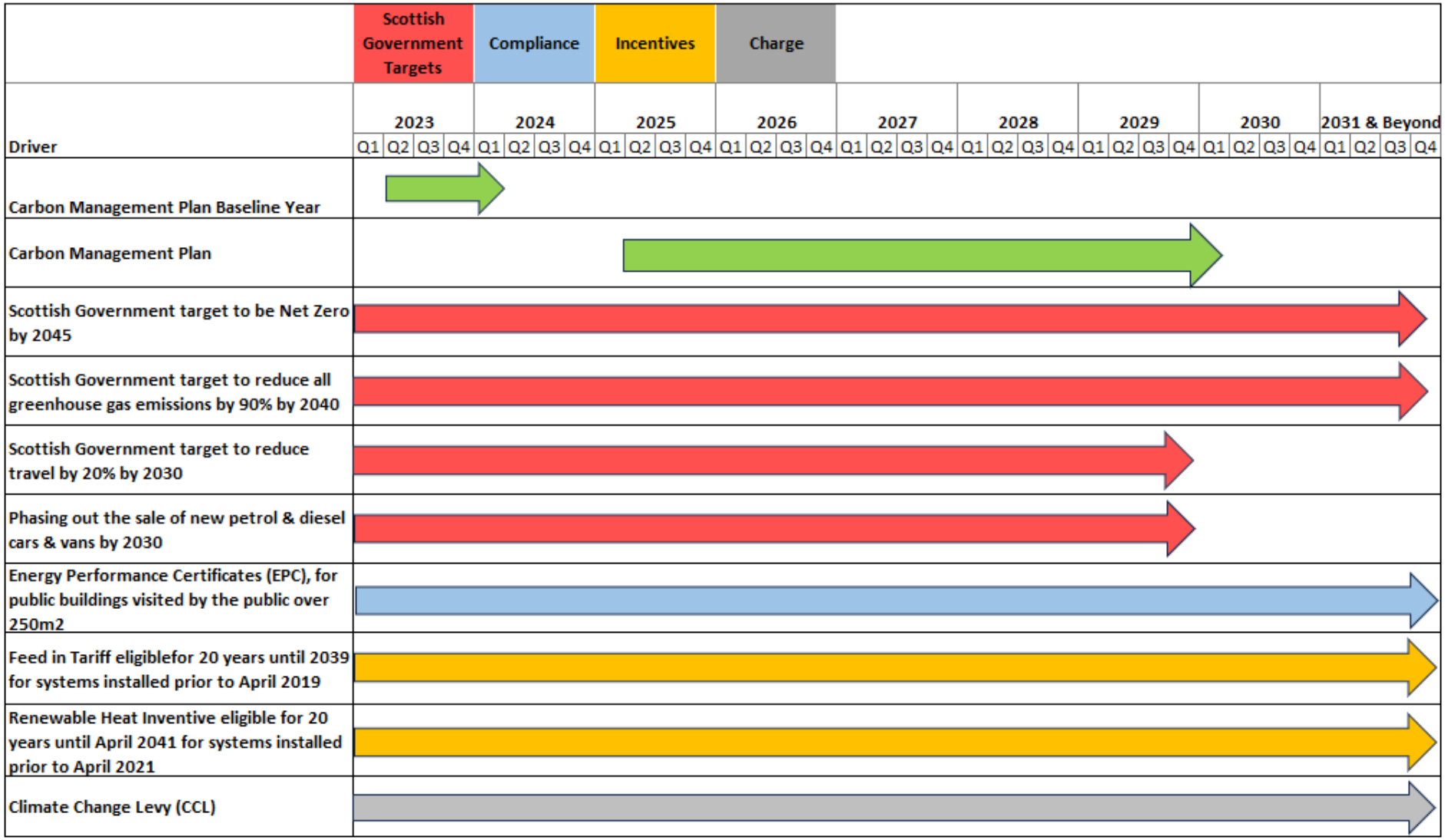

Figure 1: Key Legislative Drivers

2.1.4. Other drivers for carbon management

While reducing the financial and legal risks posed by various legislative requirements is a significant driver behind the Carbon Management Plan, there are other factors supporting the need for improving energy efficiency and reducing carbon emissions.

Cost saving*:* Reducing carbon emissions can lead to significant cost savings for Renfrewshire Council, such as implementing energy-efficient technologies and practices resulting in reduced energy consumption, leading to lower energy bills.

Streamlining operations to reduce waste and improve resource management can also lower costs. This includes practices like recycling, reducing water usage, and optimising transportation routes to minimise fuel consumption.

Investing in renewable energy sources such as solar, wind, or biomass can reduce reliance on fossil fuels and lower energy costs in the long term. While the initial investment may be high, the long-term savings from reduced energy bills can be significant.

Reducing emissions can lead to lower maintenance costs and fewer regulatory compliance expenses. For instance, cleaner technologies often require less maintenance and can help avoid fines or penalties associated with environmental regulations.

By focusing on these areas, local authorities and businesses can not only contribute to environmental sustainability but also achieve significant cost savings.

Reputational benefit: Reducing carbon emissions can bring significant reputational benefits to Renfrewshire Council, including:

- Demonstrating a commitment to sustainability can enhance trust and support from the local community. Residents are more likely to back initiatives and policies from a council that prioritises environmental responsibility.
- A strong environmental record can make a local area more attractive to investors and businesses looking to establish themselves in a green and forward-thinking community.
- Leading by example in the fight against climate change can boost the public image of the local authority, positioning it as a leader in sustainability and innovation.
- Local authorities that prioritise carbon reduction can build stronger partnerships with other organisations, including non-profits, businesses, and government bodies, all of which value sustainability.
- Initiatives to reduce carbon emissions can lead to economic regeneration, such as creating local green jobs and reducing energy costs, which further enhances the authority's reputation.

By focusing on reducing carbon emissions, Renfrewshire can, not only contribute to global climate goals, but also reap significant reputational rewards which benefit the community and the local economy.

Improved staff satisfaction: A number of studies have identified a correlation between a focus on sustainability and staff satisfaction and this can lead to improved 'productivity' or morale.

2.2. Renfrewshire Council's Low Carbon Vision

Renfrewshire Council has developed three comprehensive Carbon Management Plans with targets and timetables for substantially reducing greenhouse gas emissions and improving its impact on the environment.

This Carbon Management Plan will continue to focus on the following areas:

- Upgrade of operational properties – continuing to upgrade inefficient buildings and controls and ensure room temperatures listed in Table 5 in Appendix A are not exceeded where possible.
- Build Better – all new buildings to be sustainably designed and resource efficient.
- Generate clean power – continue to increase the quantity of energy from onsite renewables and reduce our dependency on the grid whilst increasing energy security.
- Fuel efficient transport – continued investment in electric vehicles and the continued introduction of vehicles operating using hydrogenated vegetable oil.
- Waste – reduce waste at source, increase recycling rates from domestic properties and reduce the quantity of waste being sent to landfill.
- Street lighting & traffic signals – maximise the use of LED street lighting throughout the estate. Upgrade traffic signals to LED where possible.
- Procurement – continue with, and expand the criteria for, the procurement of products that use less energy, last longer and are good for the environment.
- Awareness – create a culture of awareness across the organisation through all the areas covered under this Carbon Management Plan.
- Property rationalisation – continue the strategic property review of publicly owned and operated buildings to maximise their use and effectiveness.
- Staff Travel – reduce staff mileage when on Council Business and encourage the use of pool cars and the use of available bicycles for staff.

Capital funding for carbon reduction measures will be decided on a business case from each of the service areas covered under the Carbon Management Plan.

The objectives listed create a number of opportunities and challenges. Critical to the success of the Carbon Management Plan is the understanding and buy-in of staff across the Council. An

effective communication plan will facilitate this, and is an important element of maintaining the profile of the Plan throughout its lifecycle. The following objectives have been set for this strategy:

- To raise awareness of the Carbon Management Plan.
- To obtain buy-in to the Plan from stakeholders.
- To inform staff of progress and key milestones.
- To champion a low-carbon approach to the wider community by publicising successes.

2.3. Strategic Themes

There are two primary objectives of the Carbon Management Plan: to achieve a reduction in carbon emissions and to embed carbon management within the culture of Renfrewshire Council. In order to achieve these objectives, Renfrewshire Council will continue to build on previous Carbon Management Plans. The Sustainability Team is also undertaking the introduction of Climate Change Impact Assessments for all areas of the Council. The organisation's Strategy and Implementation Plan will, therefore, need to address the following specific areas.

2.3.1. Energy & Water

Energy use in buildings (electricity, gas and water) is by far the most significant source of carbon emissions, contributing 73% of the organisation's total footprint. Rising fuel costs and legislative drivers combine to make this a priority area for action.

The Energy Management Unit will continue to focus on increasing the energy efficiency of the estate by installing up-to-date technologies, including renewables where practicable, and engaging with staff and other stakeholders.

Strategic Target:

- To reduce carbon emissions related to electricity, gas and water in public buildings by 14% by 2029/30.

2.3.2. Transport

The organisation continues to strive to reduce carbon emissions arising from transport through fleet rationalisation and the programmed replacement of fossil fuel vehicles with electric vehicles and vehicles operating using hydrogenated vegetable oil.

Strategic Target:

- The Carbon Management Plan aims to reduce the CO_2e associated with fleet vehicles by 83%.

- The Carbon Management Plan aims to reduce staff mileage by 20%.

2.3.3. Waste

The organisation continues its commitment to reducing the quantity of waste going to landfill. The Scottish Government has set ambitious waste and recycling targets of 70% recycling of all waste and a maximum of 5% of all waste going to landfill by 2025. Renfrewshire's current recycling rate is running at approximately 45% and from all waste only 2.3% went to landfill. Environment, Housing & Infrastructure have a responsibility for promoting the utilisation of the available recycling centres within Renfrewshire, including paper, cardboard, plastic and glass collection.

Strategic Targets:

- To comply with the Scottish Government's targets for recycling and waste reduction strategies.
- The Scottish Government are due to undertake a consultation towards the end of 2026 in relation to the legislation and duties placed on local authorities in relation to recycling. Once the policy landscape becomes clearer, waste services will put in place a plan for Renfrewshire Council to meet these obligations. This will result in an amendment to the waste target once the Scottish Government provide an update.

2.3.4. Street Lighting & Traffic Signals

The organisation continues to strive to reduce carbon emissions arising from street lighting & traffic signals.

Strategic Target:

- To reduce street lighting and traffic signals' carbon emissions by 6% by 2029/30.

2.3.5. Procurement

The prudent use of natural resources is still a cornerstone of carbon management in the organisation. All new builds must achieve a minimum Energy Performance Certificate standard. On the wider procurement front, the Corporate Procurement Unit has access to contracts negotiated by Procurement Scotland[2], Scotland Excel and other external bodies for a wide range of goods and services procured on a collaborative basis. All of these bodies have sustainability as a central focus of their procurement process, and increasingly environmental factors are featuring

2 http://www.scotland.gov.uk/Topics/Government/Procurement

within the evaluation criteria applied in awarding contracts. Further guidance on sustainable procurement in Scotland is available from Zero Waste Scotland[3].

Strategic Targets:

- All new builds to achieve a minimum EPC rating of A and major refurbishment projects to meet a minimum EPC rating of B where financially possible.

2.4. Carbon Reduction: Targets and Objectives

Renfrewshire Council will aim to reduce its calculated 2023/24 baseline carbon footprint by 4,962 tCO_2e by the end of 2029/30. This represents a reduction of 23% based on the total carbon footprint of 21,505 tCO_2e emissions for the baseline year as shown in Table 2. This 2023/24 carbon footprint baseline covers consumption of electricity, gas, water and wastewater in buildings, transport (fleet), staff mileage, street lighting & traffic signals and waste. The target will be met through the implementation of a range of projects and awareness raising initiatives.

	2023/24 Baseline	Unit of Measurement	2023/24 Baseline CO2 (tonnes)	Proposed CO2 Savings over CMP (tonnes)	2029/30 CMP Target (tonnes CO2)	% Reduction per Section
Electricity (buildings)	22,904,918	kW	5,161	135	5,026	3%
Gas (buildings)	57,112,219	kW	10,449	2,098	8,351	20%
Water (buildings)	248,940	M3	70	11	59	16%
Transport (Council Fleet)	1,239,684	Litres	3,091	2,573	518	83%
Street Lighting & Traffic Signals	6,090,323	kW	1,373	85	1,288	6%
Waste	57,191	Tonnes	1,259	40	1,219	3%
Staff Mileage	381,450	Mileage	102	20	82	20%
Total			**21,505**	**4,962**	**16,542**	**23%**

Table 2 – Carbon Reduction by Category

The greatest contributor to the organisation's carbon footprint is gas in buildings which accounts for 49% of the footprint; this is followed by electricity in buildings which contributes 24% and transport at 14%. Emissions from waste, street lighting & traffic signals, staff mileage and water use account for less than 20% of the total footprint as shown in Figure 2. Therefore, reducing consumption in buildings and transport should be seen as a priority area for action, however,

3 www.zerowastescotland.org.uk/scotlandprocurement

reductions achieved in all categories will contribute to an overall decrease in Renfrewshire Council's total carbon footprint.

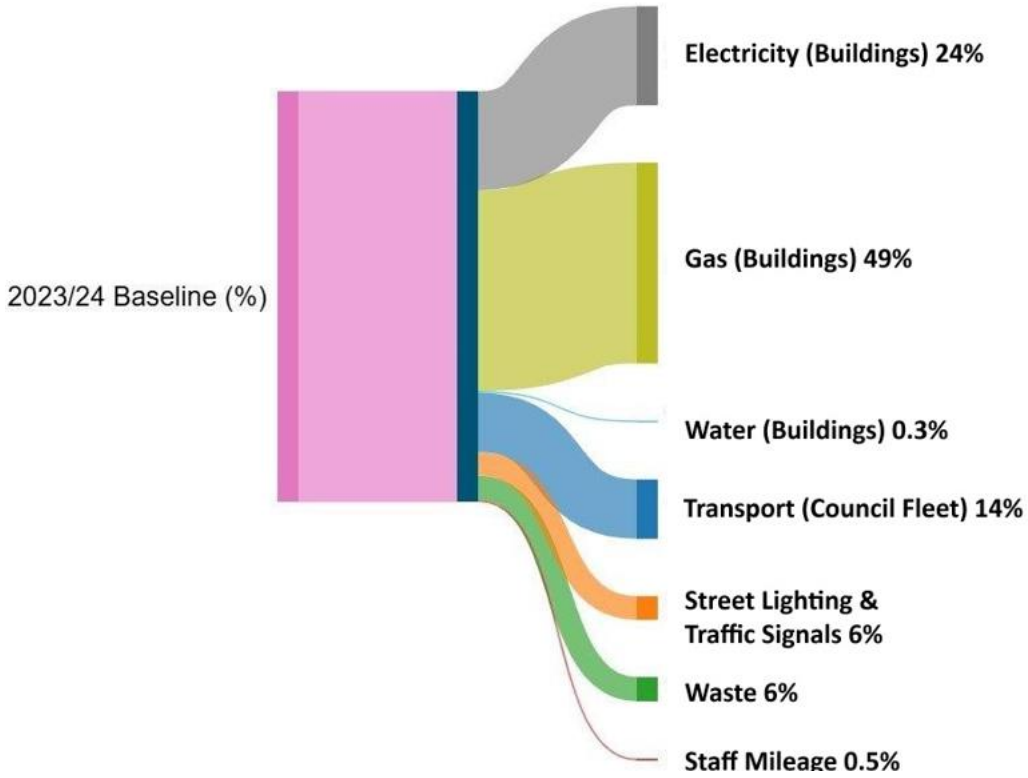

Figure 2 - Renfrewshire Council CO2 emissions (%) by Sector.

2.5. Measuring Success

As this Carbon Management Plan currently stands, Renfrewshire Council would aim to meet the overall reduction target within the prescribed timeframe. Annual Board Reports will be provided to the Infrastructure, Land & Environment Policy Board, providing progress across all areas of the Plan.

2.5.1. Business as Usual (BAU) – Asset Changes:

Public Buildings: Renfrewshire Council have been undertaking a property strategy to assess the size and extent of the Council's property portfolio and holdings, supporting community needs and service delivery whilst reducing its carbon footprint and delivering a financially sustainable property portfolio. In 2022, Renfrewshire Council commenced a strategic property review whose key principles included a commitment to reducing the carbon footprint of the Council's sustainable property portfolio.

The Council's approach to significantly reducing emissions from the property estate is reflected in the principles of the strategic property review and in its approach to formulating proposals for the future use and purpose of the Council's buildings.

Building sustainable buildings: New build properties are key in reducing energy consumption and the associated carbon. Key to informing the sustainability brief is understanding building design standards and guidance which have been produced to map out a route to Net Zero or a Low Carbon Building. The following matrix outlines some available standards that address, or partly address the performance requirements of a Net Zero Carbon / Low Carbon building.

Standard	Operational Energy	Embodied Carbon	Indoor Environmental Quality	Ecology & Biodiversity
Net Zero Public Sector Building Standard	●	●	●	X
Learning Estate Investment Programme (LEIP)	●	●	X	X
NHS Assure SDaC Guide	●	●	●	X
Passivhaus	●	X	X	X
Low Energy Transformation Initiative (LETI)	●	●	X	X
UK Green Building Council	●	●	X	X
UK Net Zero Carbon Standard	●	●	X	X
Nabers	●	X	X	X
WELL	X	X	●	X
Building with Nature	X	X	X	●
BREEAM	●	●	●	●
BB101	X	X	●	X

2.5.2. Grid Emission Factors:

The UK Government is in the process of decarbonising the electricity grid, the calculations within this Plan uses the published 2023/24 Emission Factors, published annually by the UK Department for Energy Security & Net Zero.

2.5.3. Project funding and implementation

Capital funding for carbon reduction measures will be decided on a business case from each of the service areas covered under the Carbon Management Plan. The lead officer for that service will

have responsibility for overseeing their element of the Project Register to ensure the projects are identified and undertaken within the agreed timescales.

Key Performance Indicators will be agreed by the Carbon Management Plan Working Group to ensure projects are monitored against the Project Register. The Project Register is a live document that will change and evolve throughout the life of the Carbon Management Plan.

3 Emissions Baseline & Projections

The first step in developing a Carbon Management Plan is to determine the organisation's current emissions; their 'carbon footprint baseline,' facilitating the setting of a realistic reduction target. After calculating the baseline carbon footprint for a specified year, there needs to be a forecasting exercise to estimate what the projected emissions would be at the end of the target period if no action were taken.

3.1. Boundaries

Carbon footprints are generally defined in relation to two boundaries: the organisational boundary and the operational boundary.

3.1.1. Summary of boundaries in the Carbon Management Plan

The categories included and excluded from the 2023/24 carbon footprint baseline for the organisation are shown below in Table 3.

Included in Renfrewshire Council's carbon footprint	Excluded from Renfrewshire Council's carbon footprint

▪ Electricity in buildings
▪ Natural gas in buildings
▪ Water & wastewater in buildings
▪ Waste
▪ Electricity for street lighting & traffic signals
▪ Transport (fleet)
▪ Staff Mileage
	▪ A variety of property types:
	  ▪ Door Entry Systems
	  ▪ Landlord Supplies
	  ▪ Sheltered Housing
	  ▪ Domestic District Heating
	  ▪ Homeless Person Accomodation
	▪ MUGAs
	▪ Electric Vehicle Charging Points
	▪ Fugitive emissions - refrigerant gas
	▪ Embodied energy from construction projects

Table 3: Scopes included and excluded in Renfrewshire Council's carbon footprint 2023/24

3.1.2. Organisational Boundary

The organisational boundary sets out which assets are to be included in the footprint and how any shared assets will be accounted for. The organisational boundaries used for the production of the carbon footprint are outlined in Figure 3.

Figure 3 - Organisational boundary for Renfrewshire Council's carbon footprint 2023/24 to 2029/30.

3.1.3. Operational Boundary

The operational boundary essentially sets out the emission sources included in the footprint.

Energy : this includes all energy used in buildings, including electricity and gas.

Water: this includes water supplied and waste water disposed of from council owned operational buildings. The water utility provider provides the annual carbon emissions for both water and wastewater.

Waste: Waste treatment activities can include disposal in landfill, incineration and composting. Emission factors associated with waste to landfill include transportation and methane emissions[4] whilst emissions from composting/recycling include transportation and minimal preparation emissions.

Transport (council fleet): this is measured by litres of fuel used in council owned fleet.

Street lighting & traffic signals: this is the electricity used to power our street lights and traffic signals.

Staff Mileage: this includes all mileage claims by staff whilst travelling on work business.

The operational boundaries used for the production of the carbon footprint outlined are shown in Figure 4.

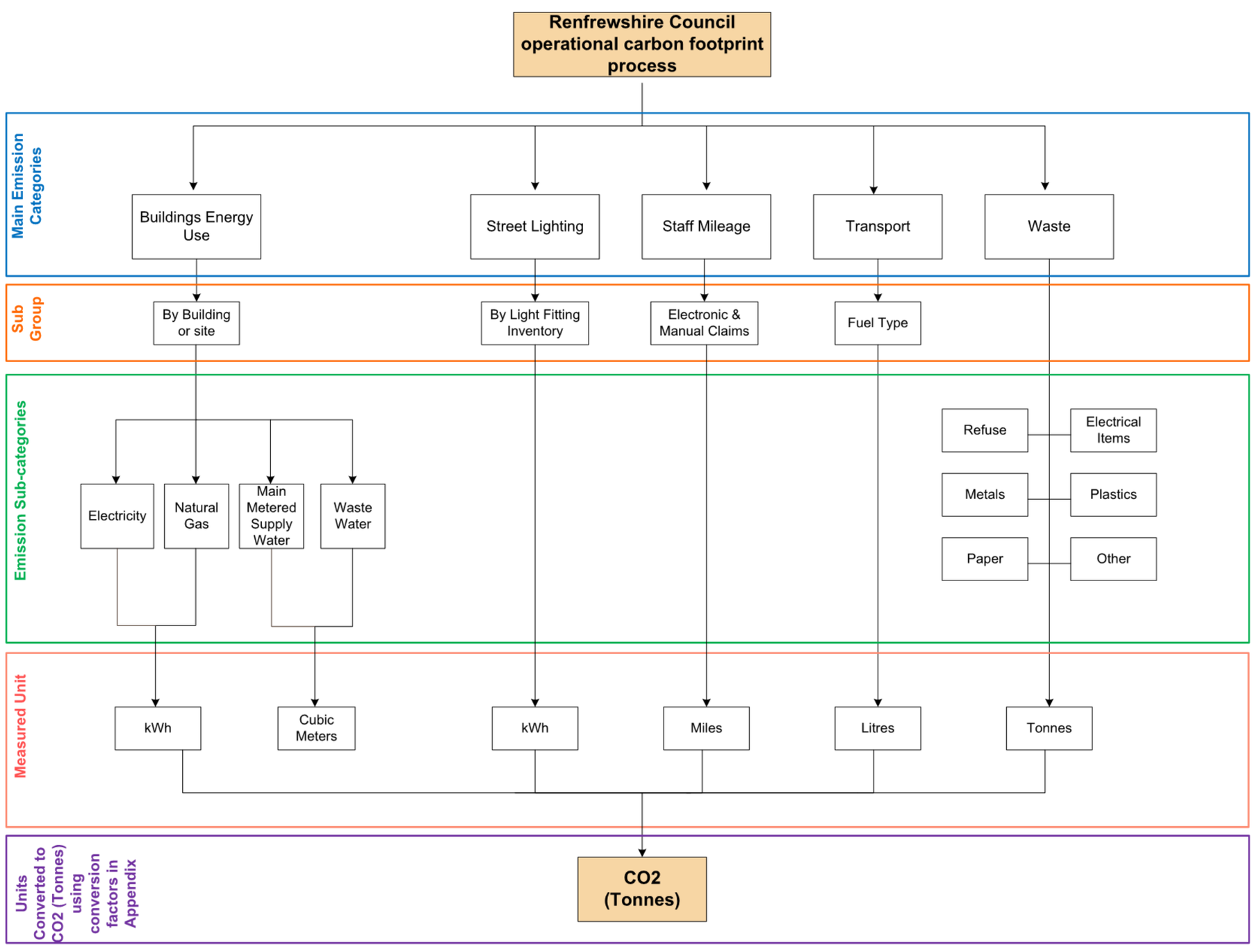

Figure 4: Operational boundary for Renfrewshire Council's carbon footprint

3.2. Data Sources

The consumption data detailed in Figure 4 is collected and then converted to tonnes Carbon Dioxide equivalent (tCO_2e) by the application of Emission Factors (EFs) which estimate the carbon emissions produced per unit of energy/goods/services.

3.2.1. Emission Factor sources

Data on energy use and transport, water and waste have been converted into carbon emissions using emission factors published annually by the UK Department for Energy Security & Net Zero.

Carbon factors, in particular the Emission Factor for electricity, change over time and this can have a significant impact on the carbon footprint calculation. More details on the Emission Factors applied can be found in Appendix B.

Emission Factors for electricity are forecast to decrease significantly in the medium to long term, primarily due to the increasing adoption of low-carbon technologies like solar and wind power and phasing out of fossil fuels like coal and natural gas. While factors like increased overall electricity demand, economic growth, and potentially lower natural gas prices or increased hydropower output can influence the short-term, the dominant trend is a downward trajectory driven by climate change mitigation policies and private sector innovation.

4 Carbon Management Projects

4.1. Introduction

Renfrewshire Council recognises that successful attainment of its carbon reduction targets is contingent upon the following key elements being in place:

- An organisational framework that is sufficiently robust to support the financing, delivery and monitoring of carbon reduction projects.
- Clearly identified responsibility and accountability for delivery against carbon reduction targets from the Carbon Management Plan outset.
- Identification of a realistic suite of carbon reduction projects across a range of areas relevant to the carbon footprint; this list must be regularly reviewed and flexible to adapt to emerging needs and opportunities for funding.
- A data collection and collation system that is integrated sufficiently to provide an annual progress update on the Carbon Management Plan. This will be delivered to the Infrastructure, Land & Environment Policy Board.

Activities may include interventions such as staff carbon literacy training.

4.2. Planned Future Projects

The projects identified below are a sample of those that have been selected for implementation.

4.2.1. Energy/Water

- Building Management Systems
- Photovoltaic panels
- LED lighting
- Boiler replacement
- Urinal controls
- Swimming pool covers

4.2.2. Transport

- Purchase of more electric vehicles
- Greater access to electric vehicle charging points
- Increasing the use of vehicles operating using hydrogenated vegetable oil

4.2.3. Waste

- Delivery of kerbside recycling and waste separation
- Reduction of waste to landfill
- Uplift in food waste recycling

4.2.4. Street Lighting & Traffic Signals

- LED street lights
- Conversion of traffic signals to LED where possible

4.2.5. Staff Mileage

- Promote the use of electric pool cars
- Introduce bicycles for staff use

4.3. Project Register

The Project Register is a spreadsheet used to record carbon reduction project data, calculate carbon savings and the analysis and reporting of progress against the carbon reduction target.

The spreadsheet was populated with Renfrewshire Council's 2023/24 footprint figure, and the target was set using a project register to provide a meaningful target from tangible projects.

The project register is a 'live' document, updated regularly to allow tracking of progress of carbon emissions. The project register is managed and maintained by the Energy Management Unit.

4.4. Projected Achievement towards Target

This Carbon Management Plan aims to achieve a 4.962 tCO_2e (23%) reduction on the 2023/24 carbon footprint by 2029/30.

Within the next 5 years, Renfrewshire Council will potentially see a number of changes in the Carbon Management Plan, such as with the Strategic Property Review, the Scottish Government's consultation on waste and recycling, along with the construction of new properties, resulting in increased electricity usage whilst reducing gas usage. As well as reducing our emissions, we are also looking to maximise our carbon offsetting/sequestration. This, coupled with the forecasted changes to the grid emissions factors, provides the Business as Usual (BAU) scenario for the council if no carbon reduction projects were taken forward. This is indicated in the council's carbon forecast in Figure 5. This illustrates the expected Business as Usual from 2023/24 – 2029/30 against the target carbon emissions. Figure 5 illustrates a carbon reduction of 23% over the years to 2029/30. The figure

illustrates how the projects in the project register will contribute towards achieving the carbon reduction target over the course of the plan timeframe.

This shows that Renfrewshire Council would be likely to achieve our emission reduction target if all projects within the Project Register with quantified savings were to be implemented in accordance with the intended timescales.

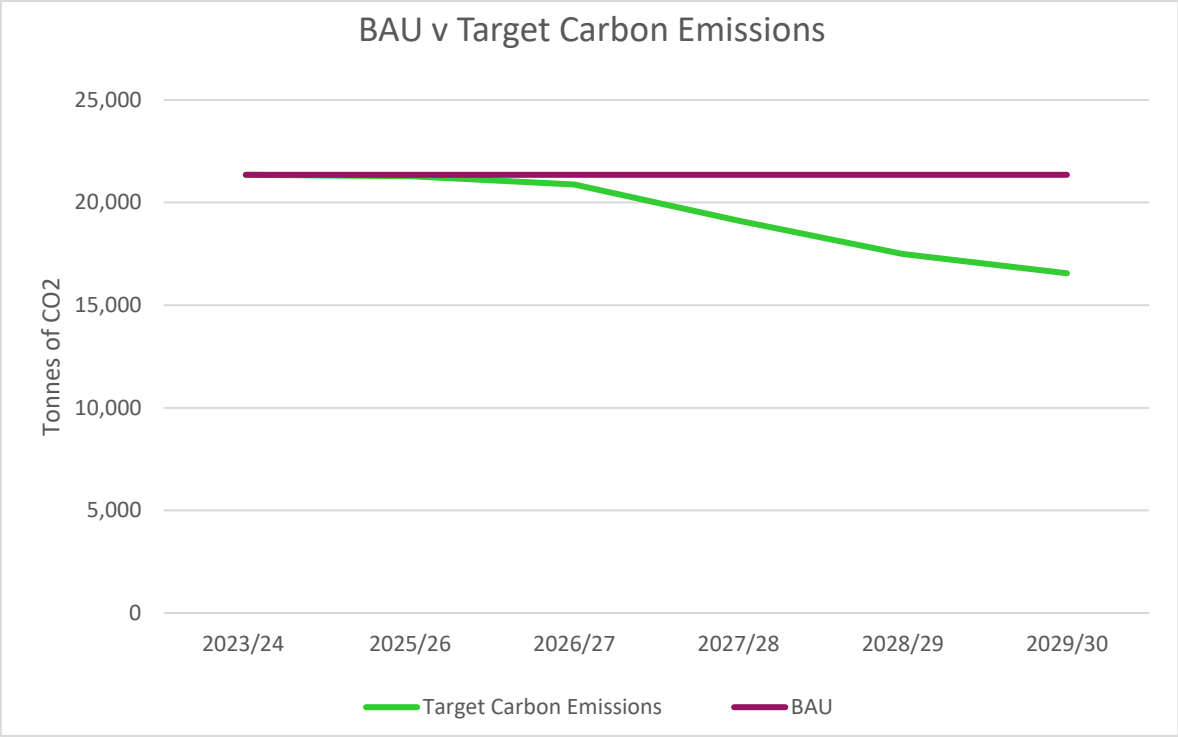

Figure 5: Carbon emission projections over time.

5 Carbon Management Plan Financing

5.1. Introduction

The capital cost of financing the planned projects within the Carbon Management Plan is the responsibility of each Service who will make a business case.

This section will draw on information input into the Project Register.

5.2. Assumptions

Cost savings: Cost savings were calculated using the utility costs for the utility contract year (2025/26) and assumed energy savings.

Carbon savings: Calculated carbon savings were derived using assumed energy savings (as outlined above) and published annually by the UK Department for Energy Security & Net Zero.

The key assumptions made in calculating the benefits and savings are:

- The unit price of gas and electricity over the next 5 years.
- Project capital requirements and financial and CO_2e savings have been based on feasibility reports.
- Default emission factors were used in converting energy kWh to tonnes CO_2e emissions as listed in Appendix B - Table 6.

Utility unit price assumptions are the most critical in determining the project financial savings. Utility supply markets are very volatile which makes prediction of future prices very difficult.

6 Management and Delivery of the Carbon Management Plan

6.1. Introduction

In order to ensure that there is effective and ongoing ownership of the Carbon Management Plan, it is important to have a fully defined governance structure. Renfrewshire Council will continue to adopt the following structure for management accountability.

6.2. The Carbon Management Plan Working Group

The Carbon Management Plan Working Group has responsibility for the strategic direction and implementation of the Carbon Management Plan. Annual updates will be provided to the Infrastructure, Land & Environment Policy Board.

Twice per annum, the Carbon Management Plan Working Group will meet to discuss progress to ensure the annual targets will be achieved. The required attendees are listed in Table 4 below and comprises of operational managers and senior technical staff who are committed to driving the carbon reduction agenda forward.

Role
Sustainability Manager
Energy Team Leader
Waste Strategy & Business Team Lead
Senior Manager – Infrastructure & Transportation
Fleet & Sustainable Transport Manager
OneRen Strategic Asset Manager

Table 4: Carbon Management Plan Working Group

The remit of the Carbon Management Plan Working Group includes:

- ensuring effective communication of the organisation's policies to staff
- monitoring the organisation's performance against its carbon management targets
- raising the profile of carbon management in the community and promoting environmentally sustainable behaviour by staff, pupils and visitors.

6.3. Operational Roles and Responsibilities

Energy Team Leader

The Energy Team Leader will co-ordinate the implementation of the Carbon Management Plan and report on its progress annually to the Infrastructure, Land & Environment Policy Board. The Energy Team Leader will be responsible for data collection and reporting.

6.4. Communication and Training

The Corporate Communications Team have developed a planned approach to raising carbon reduction awareness through the development of a robust Communications and Awareness Strategy.

There are many avenues of communication available and these will be fully utilised in promoting the carbon reduction message to all staff and visitors. Effective communication and engagement is key to success. It is recognised that substantial cultural change will take time to deliver.

Initiatives for building awareness include:

- Publishing the Carbon Management Plan
- Carbon Literacy training
- Regular communication
- Staff induction training

A Carbon Literacy programme is being rolled out to staff across the council. Carbon Literacy is a term used to describe an awareness of climate change, and the climate impacts of people's everyday actions. Carbon Literacy is the knowledge and capacity required to create a positive shift in how people live, work and behave in response to climate change. Learners who have completed the Carbon Literacy learning can be certified as 'Carbon Literate'. An iLearn module is being created to help with its implementation.

Appendix A

Recommended temperature set-points within council operated buildings.

Room/Building Type	Temperature (°C)
Office	21
Libraries	19-21
Museums/Art Galleries/ Town Halls	19-21
Sport & Leisure Changing Rooms	20-25
Sports Halls	16
Teaching Spaces	19-20
Corridors	17
Care Homes	21
Light Work	16-19
Industrial/ Heavy Work	11-19

Table 5 – recommended temperature set points.

Heating Season

In order to help reduce running costs through periods of warm weather, the heating within buildings shall only operate between October to May. Out-with this time period the heating will only come on if the outside air temperature is 12°C or lower, this will enable the building to achieve its desired temperature.

Appendix B
Carbon Emission Factors Used

The Emission Factors in Table 6 are published annually by the UK Department for Energy Security & Net Zero.

Emission Type	Emission source	Scope	Units	Emission factor	Units
Electricity	Electricity: UK	Scope 2	kWh	0.20705	kg CO2e/kWh
Electricity	Transmission and distribution - Electricity: UK	Scope 3	kWh	0.0183	kg CO2e/kWh
Fuels	Natural gas	Scope 1	kWh	0.18293	kg CO2e/kWh
Water	Water supply	Scope 3	cubic metres	0.10000	kg CO2e/cubic metre
Water	Water treatment	Scope 3	cubic metres	0.19000	kg CO2e/cubic metre
Fuels	Diesel (average biofuel blend)	Scope 1	litres	2.51206	kg CO2e/litres
Fuels	Petrol (average biofuel blend)	Scope 1	litres	2.09747	kg CO2e/litres
Transport - car	Average car - Unknown	Scope 3	miles	0.26817	kg CO2e/miles
Fuels	LPG	Scope 1	litres	1.55713	kg CO2e/litres
Fuels	Gas oil	Scope 1	litres	2.75541	kg CO2e/litres
Fuels	Hydrogenated Vegetable Oil	Scope 1	litres	0.03558	kg CO2e/litres
Waste	Commercial and industrial waste - Landfill	Scope 3	tonnes	520.33474	kg CO2e/tonnes
Waste	Organic: garden waste - Composting	Scope 3	tonnes	8.91242	kg CO2e/tonnes
Waste	Batteries - Recycled	Scope 3	tonnes	21.28081	kg CO2e/tonnes
Waste	Paper and board: mixed - Recycled	Scope 3	tonnes	21.28081	kg CO2e/tonnes
Waste	WEEE - mixed - Recycled	Scope 3	tonnes	21.28081	kg CO2e/tonnes
Waste	Glass - Recycled	Scope 3	tonnes	21.28081	kg CO2e/tonnes
Waste	Plastics: average plastics - Recycled	Scope 3	tonnes	21.28081	kg CO2e/tonnes
Waste	Metal: scrap metal - Recycled	Scope 3	tonnes	21.28081	kg CO2e/tonnes
Waste	Clothing - Recycled	Scope 3	tonnes	21.28081	kg CO2e/tonnes
Waste	Household/Municipal/Domestic waste - Combustion	Scope 3	tonnes	21.28081	kg CO2e/tonnes
Waste	Clothing - Combustion	Scope 3	tonnes	21.28081	kg CO2e/tonnes
Waste	Organic: mixed food and garden waste - Composting	Scope 3	tonnes	8.91242	kg CO2e/tonnes
Waste	Household/Municipal/Domestic waste - Landfill	Scope 3	tonnes	497.04471	kg CO2e/tonnes

Table 6 - Emission Factors

Appendix C

Business As Usual

What is Business as Usual (BAU)

Business as usual (BAU) is the normal execution of standard operations within an organisation, particularly in contrast to a project or programme which would introduce change. In the context of carbon management, this means that BAU represents an estimate of what the overall carbon footprint of the organisation (based on the current footprint boundary) is likely to be in future years.

This BAU scenario needs to take into account internal and external growth factors that are likely to affect the carbon footprint over time. Although an overall carbon footprint is a single figure, in reality it is a complex underlying calculation, with different emission sources affected by these factors in different ways as listed in Table 7.

External Factors	Impact on Carbon Management Plan
Electricity grid carbon factor -the factor applied to convert units of kWh of electricity consumed to a figure of carbon dioxide equivalents emitted.	Grid factor changes year on year due to a variety of external factors outside of the organisation's control including relative price of different fuels for power generation. Over a longer period of time, the grid factor changes due to energy policy and the relative contribution of different fuels and sources of generation e.g. renewables. The aim of energy policy is to reduce the carbon intensity of the grid and this will have a large effect on the overall footprint

Table 7 – Factors influencing the CMP

Why is it important to model BAU?

If an organisation's BAU carbon footprint is actually increasing faster than anticipated, the efforts of the Carbon Management Plan Working Group would be underestimated – this is especially true when the measured footprint appears to be flat-lining or even increasing and senior managers might question the impact of investment. However, a more accurate model of the BAU could show that without the efforts of the Carbon Management Plan Working Group, the footprint would have risen even more steeply.

More sophisticated models of BAU also provide a more in-depth look at which parts of the footprint are increasing and decreasing over time and this, along with financial models of the costs of fuels and services such as waste and water, can help organisations make better strategic decisions for future investment.

Appendix D

Risk Register, Table 8

Risk No:	Impact:	Probability:	Description:	Mitigation:
1	H	L	*Timing* If Carbon Management Plan is not completed on time and is not sustainable in its implementation and long term goals then projected carbon savings will not accrue within the expected timescale and could lead to failure of entire exercise	Liaise with Project Sponsor to ensure sufficient time and resource available
2	H	M	*Negative Financial implications* If finance is not made available as required and there is resistance to the implementation of major schemes then the expected scope for carbon reduction will be greatly minimised	Ensure projects identified are approved by Finance
3	H	M	*Resistance to Cultural change* Whilst many staff appear to embrace the general "sustainability" agenda the need to change behaviours with regard to energy efficiency in the workplace needs to be embraced.	Liaise/lobby staff and Departments through a joint Awareness Campaign
4	H	L	*Legislative Changes* Forthcoming legislative changes are likely to enhance opportunities both for investment and also technical improvement of buildings and related energy efficiency. If this is delayed or shelved, there may be less leverage with certain departments to ensure change.	Ensure that legal ramifications of regulatory changes are fed through early in any communication and are understood by all participants
5	M	M	*Continuity of Project Managers* If the Carbon Plan Management is to be delivered effectively the key personnel involved must be fully engaged and retained on the Project. The most important personnel are the Carbon Management Plan Working Group, project sponsor and the Energy Team Leader	Ensure succession planning is in place.

Table 8 – Risk Register

Environment, Housing & Infrastructure
Renfrewshire Council
Renfrewshire House
Cotton Street
Paisley
PA1 1BR

www.renfrewshire.gov.uk

Renfrewshire Council