Inverclyde council

Report To:	Environment & Regeneration Committee	Date:	28 October 2021
Report By:	Interim Service Director, Environment & Economic Recovery	Report No:	E&R/21/10/09/SJ
Contact Officer:	Alan Williamson	Contact No:	01475 712491
Subject:	Greenhouse Gas Emission Reporting and Achieving Net-Zero		

1.0 PURPOSE

1.1 The purpose of this report is to inform the Committee of the greenhouse gas emission data that is to be submitted to the Scottish Government with respect to climate change reporting required by the Climate Change (Scotland Act) 2009. The report also seeks approval of a Net Zero Strategy for the Council.

2.0 SUMMARY

2.1 Local authorities are required to report annually on their performance and action with respect to climate change. The data to be submitted shows that from the baseline year of 2012/13, the Council has been steadily reducing its carbon emissions. In 2012/13, the Council's total emissions were 19,104 tonnes while in 2020/21, they were 10,564 tonnes.

2.2 Local authorities are also required to set a target year for achieving net-zero greenhouse gas emissions and how they will align funding to achieve this. To support these requirements the Council has prepared a Net Zero Strategy. This sets a net zero target year of 2045, with an interim target of reducing 2012/13 carbon emissions by 72.5% by 2030/31.

3.0 RECOMMENDATIONS

3.1 It is recommended that the Committee:
   (a) Note the ongoing reduction of the Council's greenhouse gas emissions set out in Appendix 1; and
   (b) Approve the Net Zero Strategy attached as Appendix 2, and note that an action plan will be developed and brought to Committee setting out the detail of how the net zero target year of 2045 and interim target will be achieved, with financial implications.

Stuart W. Jamieson
Interim Director, Environment and Economic Recovery

4.0 BACKGROUND

4.1 In 2015 the Scottish Government brought into force powers in the Public Bodies Duties section of the Climate Change (Scotland) Act 2009 to introduce mandatory annual reporting on climate change for 'major players' in the public sector, including local authorities.

4.2 In May 2019, the Committee on Climate Change, in a request from the Governments of the UK, Scotland and Wales, advised on reassessing the UK's long term greenhouse gas emissions targets. It advised on new emissions' targets for the UK of net zero by 2050 and in Scotland net zero by 2045. The targets in Scotland reflects its greater relative capacity to remove emissions than the UK as a whole. Following this, the Scottish Government declared a climate emergency and set a net zero target year for Scotland of 2045.

4.3 The Scottish Government considers the public sector as having a role in leading climate change action and from 2022 public bodies are required to include a target date for achieving net zero direct emissions in their annual reporting.

5.0 CLIMATE CHANGE REPORTING

5.1 The climate change reporting data to be submitted by the Council (See Appendix 1) shows that, from a baseline of 2012/13, the Council has been steadily reducing its carbon emissions. By 2020/21, the Council had reduced its greenhouse gas emissions from 19,104 in 2012/13 to 10,564 tonnes, a reduction of 45%. It should be noted that the 2020/21 emissions figure actually includes additional emissions sources, so the like-for-like percentage reduction is actually higher at 51%. The Council has managed to reduce its emissions through a range of measures. In particular, its building rationalisation and new build/refurbishment programme has reduced the number of operational buildings and improved the energy efficiencies of its building portfolio. The Council has also replaced its street lamps with LEDs that use around half the electricity of the previous lamps, and introduced electric vehicles to its fleet. The decarbonisation of the electricity supply in the national gird has also had a significant impact on reducing emissions.

6.0 NET ZERO STRATEGY

6.1 The Council has worked with consultants to prepare a Net Zero Strategy for Inverclyde Council, which is attached as Appendix 2 for approval. The strategy focuses on the direct emissions of Inverclyde Council, including the Health and Social Care Partnership, but not Inverclyde Leisure. However, it should be noted that the Council, as landlords for the IL properties will shoulder the bulk of the financial liability for any capital investment required in IL properties. The strategy has been prepared as a public-facing document setting out Inverclyde Council's commitment to achieving net zero, in addition sufficient detail has been produced in schedules of works and these, along with the financial implications will contribute to a detailed action plan which will be presented to a future Committee. The strategy identifies 2045 as the target year for Inverclyde Council to achieve net-zero, aligning with the Scottish Government's target year for Scotland. The strategy is based on a programme of identified and costed projects for the period to 2030/31, which, when coupled with the ongoing decarbonisation of electricity supply, it is estimated would result in Inverclyde Council's greenhouse gas emissions reducing to 5,246 tonnes, which is 72.5% less than the 2012/13 baseline, with the like-for-like reduction actually higher owing to the additional emission sources included in the 2030/31 estimate. A more high level approach is then set out for how net-zero can be achieved by 2045. The primary focus of the strategy is the reduction of greenhouse gas emissions, but offset projects such as tree planting is included in the strategy for those emissions than cannot be reduced. The strategy proposals for the main sources of greenhouse gas emissions are set out below.

6.2 Buildings – Actions relate to replacement of end-of-life fossil fuel boilers with net-zero heating, installation of solar panels on buildings identified as being suitable, and the consolidation of the Council estate where opportunities exist. It is proposed that, where possible, new

buildings are designed to be net zero. It should be noted that the majority of greenhouse gas emissions reductions from buildings to date has been as a result of the decarbonisation of the electricity and gas supply. This trend is likely to continue.

6.3   Waste – The Council's direct greenhouse gas emissions on which it reports relate to internal waste only. However, the Council also has an influence and, to a certain extent, a responsibility, for greenhouse gas emissions from the household and commercial waste it collects. Actions included in the strategy relate to all waste and include meeting Scottish Government targets for increasing recycling and reducing waste to landfill.

6.4   Transport – Actions relate to continuing to electrify the Council's fleet and reducing the need for staff to travel in their own and Council vehicles.

6.5   Streetlighting – Over 97% of streetlights in Inverclyde have been upgraded to LED. The strategy is for the remaining 3% to be upgraded.

6.6   Water – Greenhouse gas emissions associated with water relate to its treatment and distribution before and after use. Scottish Water's own net-zero plans will reduce this but the strategy includes action relating to reducing leaks in Council premises, additional water metering, and raising awareness and installing equipment (washers, taps) to minimise use.

6.7   The strategy also includes sections on awareness/behaviour change and governance. On the former, the strategy includes actions on raising awareness across Council service areas and staff on how their operations/behaviours can change to reduce the Council's greenhouse gas emissions. The strategy also recognises that the Council has a wider role in reducing greenhouse gas emissions across all of Inverclyde. Governance actions include embedding climate change into the Council's corporate/service planning, including risk registers, and the Climate Change Group of officers leading on the delivery and monitoring of the progress to net zero. The strategy suggests that there should be an energy engineer role created within the Council, providing internal technical expertise on energy saving projects, and that greenhouse gas emissions should become a consideration in the Council's procurement of goods and services. The strategy also recognises other non-direct emissions such as, for example, from Inverclyde Leisure properties, the commercial properties leased by the Council, none of which currently feature as part of the Council's reported carbon footprint. It states that the Council should continue to review what it includes within its reporting and how carbon emissions from these sources are measured and reduced.

7.0   IMPLICATIONS

7.1   **Finance**

The Council is required by legislation to include in its 2022 climate change reporting how it is aligning its funding towards achieving net zero. As part of the preparation of the Net Zero Strategy examples of costed projects have been identified by consultants for the period to 2030/31. The indicative cost of these projects is estimated at £10.5M. Around £4.6M of this expenditure is predicted to be incurred under a business as usual approach e.g. the like-for-like replacement of end-of-life gas boilers or diesel vehicles, with the extra £5.9M incurred as a result of choosing more sustainable options e.g. heat pumps and electric vehicles.

.Further information on costs and projects will form part of the Action Plan to be developed, which will require to be considered as part of future Budget rounds. The strategy has excluded buildings leased to Inverclyde Leisure. Consideration will require to be given in respect of our obligations to these buildings as landlord.

Financial Implications:

One off Costs

Cost Centre	Budget Heading	Budget Years	Proposed Spend this Report	Virement From	Other Comments

Annually Recurring Costs/ (Savings)

Cost Centre	Budget Heading	With Effect from	Annual Net Impact	Virement From (If Applicable)	Other Comments

7.2 **Legal**

There are no direct legal implications arising from this report.

7.3 **Human Resources**

There are no direct human resource implications arising from this report.

7.4 **Equalities**

Equalities

(a) Has an Equality Impact Assessment been carried out?

X	YES
	NO – This report does not introduce a new policy, function or strategy or recommend a substantive change to an existing policy, function or strategy. Therefore, no Equality Impact Assessment is required

(b) Fairer Scotland Duty

If this report affects or proposes any major strategic decision:-

Has there been active consideration of how this report's recommendations reduce inequalities of outcome?

	YES – A written statement showing how this report's recommendations reduce inequalities of outcome caused by socio-economic disadvantage has been completed.
X	NO

(c) Data Protection

Has a Data Protection Impact Assessment been carried out?

	YES – This report involves data processing which may result in a high risk to the rights and freedoms of individuals.

| X | NO |
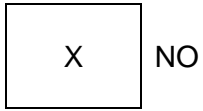
7.5 **Repopulation**

There are no direct repopulation implications arising from this report.

8.0 CONSULTATIONS

8.1 Staff from relevant Council services were consulted in the preparation of the Net Zero Strategy.

9.0 BACKGROUND PAPERS

9.1 Appendix 1:   Extract from Scottish Government climate change reporting template incorporating Council performance and action with respect to climate change.

Appendix 2: Inverclyde Council Net Zero Strategy

Table 1: Council Emissions

Reference year	Year	Scope 1	Scope 2	Scope 3	Total	Units
Baseline Year	2012/13	8,532	9,487	1,085	19,104	tonnes
Year 1 carbon footprint	2013/14	7,504	8,301	1,699	17,504	tonnes
Year 2 carbon footprint	2014/15	6,071	8,594	1,549	16,214	tonnes
Year 3 carbon footprint	2015/16	6,459	7,104	1,245	14,808	tonnes
Year 4 carbon footprint	2016/17	6,280	6,816	1,361	14,457	tonnes
Year 5 carbon footprint	2017/18	6,383	5,330	1,064	12,777	tonnes
Year 6 carbon footprint	2018/19	6,025	4,024	879	10,928	tonnes
Year 7 carbon footprint (as reported)	2019/20	5,952	3,234	1,026	10,212	tonnes
Year 7 carbon footprint (revised)	2019/20				11,561	tonnes
Year 8 carbon footprint	2020/21	5,694	2,548	2,322	10,564	tonnes

Note:

(i)   'tonnes' refers to tonnes of carbon dioxide equivalent, which incorporate all greenhouse gases but calculated in terms of tonnes of carbon.

(ii)   Scope 1 refers to 'direct' emissions, which are those from activities owned or controlled by an organisation. For example, combustion of natural gas in owned or controlled gas boilers.

(iii)   Scope 2 refers to 'energy indirect' emissions, which are those that are a consequence of an organisation's energy use but occur at sources it does not own or control. For example, use of purchased electricity.

(iv)   Scope 3 refers to 'other indirect' emissions, which are those that are a consequence of an organisation's actions but occur at sources it does not own or control and are not classed as Scope 2 emissions. For example, business travel in vehicles not owned or controlled by an organisation.

(v)   The year 7 figure is revised from previously reported as it now includes 'Well To Tank' emissions for gas and electricity supply in line with the UK Greenhouse Gas Protocol. This ties in with the 2019/20 baseline in the Net Zero Strategy and will be the measure used going forward, including for the 2020/21 emissions figure shown above.

Table 2: Breakdown of Council Emissions 2020/21

Emission source	Scope	Consumption data	Units	Emissions (tonnes)
Grid electricity use	Scope 2	10,929,928	kilowatt hour	2,548.3
Grid electricity (transmission & distribution losses)	Scope 3	10,929,928	kilowatt hour	219.1
Well To Tank Grid electricity use	Scope 3	10,929,928	kilowatt hour	352
Well To Tank Grid electricity (transmission & distribution losses)	Scope 3	10,929,928	kilowatt hour	30
Natural gas use	Scope 1	26,329,700	kilowatt hour	4,841.2
Well To Tank Natural gas use	Scope 3	26,329,700	kilowatt hour	630
Burning oil (kerosene) use	Scope 1	1,228	litres	3.1
Well To Tank Burning oil (kerosene) use	Scope 3	1,228	litres	1
Biomass (wood pellets) use	Scope 1	1,471,600	kilowatt hour	22.7
Well To Tank Biomass (wood pellets) use	Scope 3	1,471,600	kilowatt hour	58
Internal waste to landfill	Scope 3	1,024	tonnes	469.2
Recycling of internal waste	Scope 3	85	tonnes	1.8
Diesel use	Scope 1	324,512	litres	826.2
Well To Tank Diesel Use	Scope 3	324,512	litres	198
Petrol use	Scope 1	121	litres	0.3

Well To Tank Petrol Use	Scope 3	121	litres	0.07
Water use	Scope 3	98,439	cubic metres	34
Wastewater treatment	Scope 3	93,517	cubic metres	66
Business travel using employee owned vehicles	Scope 3	1,230,091	kilometres	263

Inverclyde Council Net Zero Strategy 2021-2045

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Foreword

Welcome to Inverclyde Council's Net Zero Strategy.

In 2021, as we watch footage on our screens of severe weather events around the world – including deadly flooding and wildfire events on several continents – Inverclyde can seem unaffected by climate change. But we are part of that global concern.

Firstly, Inverclyde is and will continue to be affected by climate change. Scotland's weather is predicted to become wetter and windier, and in an area already prone to flooding this will continue to have a disruptive effect through transport disruption and damage to property, which will cost us time, money and distress. Increased heat is also predicted, including warmer and prolonged heatwaves, which can have an impact on health, especially of our elderly population. Even small shifts in temperature can have an impact on our fragile ecosystem, which could lead to some species disappearing from Inverclyde, whilst other species, not native to the area, relocate here, further impacting on the local ecosystem.

Secondly, greenhouse gas emissions from Inverclyde contribute to climate change and therefore have an impact globally.

Inverclyde Council, including the Health and Social Care Partnership, has its own carbon footprint, emitted through, for example the heating and powering of its buildings and running its transport fleet. Whilst there is a legal requirement for the Council to declare a year when it will reach net-zero carbon emissions – and how it will fund this - there is also a moral duty for the Council to reduce its emissions and to lead the way in encouraging Inverclyde's communities, businesses and organisations to do the same.

Inverclyde Council has already made good progress in reducing its carbon emissions from 19,104 tonnes in our baseline year of 2012/13 to 11,561 tonnes in 2019/20, a reduction of 39%. This strategy commits the Council to matching the Scottish Government's national target of reaching net-zero emissions by 2045, but it also sets an ambitious interim target of reducing Inverclyde's emissions to 5,246 tonnes by 2031, which would mark a 72.5% reduction on emissions since our 2012/13 baseline year. The strategy is based on technical work that has identified and costed the projects required to meet that 2030/31 ambition, and for the period beyond it indicates what might be required and help us achieve net-zero by 2045.

I hope in reading this document you will recognise the ambitious and challenging journey towards achieving Net Zero that Inverclyde has started and its commitment to continuing that journey. I hope that every resident, business and organisation can join us in taking steps, whether large or small, to not only reduce the overall carbon footprint of Inverclyde, but also the realise the opportunities that a shift to a greener economy brings.

Introduction

This document sets out Inverclyde Council's route map to achieving net zero greenhouse gas emissions by 2045. This means that by 2045, Inverclyde Council will have undertaken projects and ceased activities in order to reduce its greenhouse gas emissions, with any remaining emissions the Council produces being balanced out by projects and activities that will remove emissions from the atmosphere. The focus of the strategy is reducing greenhouse gas emissions as much as possible.

This strategy is focussed on the greenhouse gas emissions produced as a result of the activities of Inverclyde Council, including the Health and Social Care Partnership. It also considers greenhouse gas emissions from the household and commercial waste that the Council collects and manages. Although, these particular emissions are not produced by the Council, it can have an influence in reducing them.

It considers most but not all of the emissions generated by the activities of the Council. Greenhouse gas emissions are grouped by 'Scopes'. Scope 1 emissions are directly produced emissions, so would include, for example, emissions produced through the operation of gas boilers in Council properties and through the operation of Council petrol/diesel vehicles. Scope 2 emissions are produced through the generation of electricity used by the Council. Scope 3 relates to emissions that are a consequence of the Council activities, but are not owned or controlled by the Council. The Scope 3 emissions considered by this strategy include for example internal waste, employees' use of their own vehicles for Council business, and emissions produced through the provision of water and treatment of waste water. Overall the greenhouse gas emissions from the three Scopes are brought together using a methodology to establish comparable numbers for different greenhouse gas emissions. These comparable numbers are then referred to as a 'carbon dioxide equivalent' or 'CO_2e'. The result of adding these emissions together is commonly referred to as a 'carbon footprint'.

Section 1 of this document sets the context for why this strategy is necessary. It explains how and why the climate is changing and the global, national and local response to this. It provides information on past and current level of greenhouse gas emissions by the Council, demonstrating the significant reduction the Council has already made to its carbon footprint.

Section 2 sets out the Council's routemap to net-zero, setting an ambitious interim target of 72.5% reduction in carbon footprint by 2031 and achieving net zero by 2045.

Section 3 focuses on the main sources of Council greenhouse gas emissions and sets out the actions the Council will take to reduce emissions in relation to these. These sources are:

- Buildings
- Transport
- Streetlighting
- Water
- Waste

Section 4 sets out the strategy for raising awareness and embedding the behaviour change required of Council staff that will help net zero be achieved. Section 5 covers how the transition to net zero will be governed within the Council based on a circular 'Plan-Do-Check-Act' structure – we plan what we are doing across a set time period, implement activities, monitor our results, assess our performance and make changes for improvement. The cycle is then repeated, taking account of changing circumstances such as carbon emissions reductions, new technologies, and further opportunities to eliminate emissions.

Section 1: Context and Current Carbon Footprint.

Climate change is one of the most serious threats facing the world today. In its latest report, the Intergovernmental Panel on Climate Change (IPCC) stated that 'human-induced climate change is already affecting many weather and climate extremes in every region across the globe.' In 2021, severe weather events such as the flooding in Germany and China have been attributed to climate change. The IPCC states that global warming is directly related to larger changes in the climate system such as droughts, heavy rainfall, intense storms and reductions in Arctic sea ice.

In December 2015, at the United Nations climate change conference (COP21) in Paris, a global agreement was made to limit the global temperature rise to 2°C by the end of the century and pursue efforts to limit the temperature increase to 1.5°C. This was termed the 'UN Paris Agreement' and it came into force on 4 November 2016. The UK is hosting the next conference of its kind, 'COP26' in Glasgow in November 2021. This conference is regarded as being crucial to help achieve the targets set out in the UN Paris Agreement. The IPCC has stated that global warming will exceed the 1.5°C and 2°C targets in this century if deep reductions in greenhouse gases are not made in the coming decades.

In Scotland, legislation with respect to climate change emanates from the Climate Change (Scotland) Act 2009, which set a target to reduce greenhouse gas emissions by 80% by 2050 from a 'baseline' year of 1990. Following global protests, notably among the youth, Scotland, in 2019, became one of the first countries in the world to declare a 'climate emergency' and amended the Climate Change (Scotland) Act 2009, to set a new target to achieve 'net zero' greenhouse gas emissions by 2045. Net zero refers to eliminating greenhouse gases as much as possible but for those that cannot be eliminated, removing these from the atmosphere through 'offsetting', such as planting trees.

The Climate Change (Scotland) Act 2009 set out requirements for the public sector to act on climate change under its 'Public Bodies Duties' sections. One such requirement was in regards the public sector reporting on its climate change performance and action, which came into force in 2015. In accordance with setting a national net zero target year of 2045, the Scottish Government has introduced further legislation for the public sector entitled 'The Climate Change (Duties of Public Bodies: Reporting Requirements) (Scotland) Amendment Order 2020'. This requires public sector bodies to declare a target date for achieving zero direct emissions of their greenhouse gases and annually report on their progress in achieving this.

Inverclyde Council published its first Carbon Management Plan in 2009. This focused on reducing greenhouse gas emissions from energy and water use in buildings, streetlighting, transport associated with Council business and municipal waste (all waste internal and external collected by the Council). The plan was revised in 2012, and then again in 2018 when it was retitled as a Climate Change Plan. Over the period of these plans, Inverclyde Council has reduced its carbon footprint significantly.

The focus of this strategy is the direct greenhouse gas emissions of the Council. These have been measured for the purposes of Public Bodies Duties Climate Reporting since 2012/13. This excludes external municipal waste, as whilst the Council has influence over emissions from this source, they are not directly assigned to the Council.

Over the period of reporting, the Council has seen a reduction of 39% in its carbon emissions from building energy use, transport/fleet, street lighting, water and internal waste. In numbers, direct Council emissions have fallen from 19,104 tonnes in 2012/13 to 11,561 tonnes in 2019/20. Emissions for 2019/20 have been revised to be based on the internationally recognised Greenhouse Gas (GHG) Protocol methodology, meaning the like-for-like decrease has been even greater.

The following chart demonstrates the progress the Council has already made. It shows the comparison of Council carbon footprint from 2012/13 to 2019/20, together with the quantities of emissions per key area:
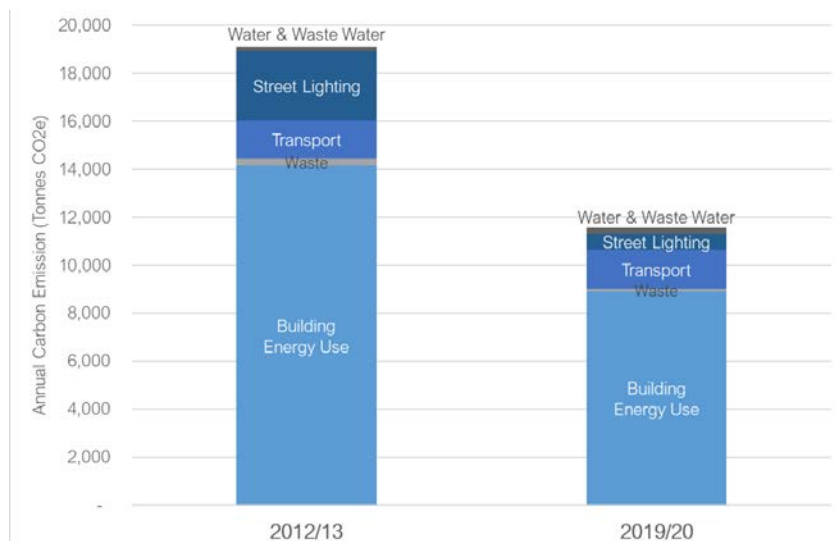
From the 11,561 tonnes of CO_2e emitted in 2019/20, the identified significant carbon emitters which account for 91% of these greenhouse gas emissions are:
- Building energy use (77%)
- Transport (14%)

Council internal waste, streetlighting and water account for the remaining 9% of emissions.

This strategy sets out how Inverclyde Council will continue to reduce its carbon footprint.

Carbon Emissions Factors – Current and Future

Enabling a level playing field across the UK, carbon 'emissions factors' are published annually by UK Government Department, Business, Energy and Industrial Strategy (BEIS). These factors take into account the changing infrastructure and carbon intensity of certain activities, e.g. electricity generation, transport fuels and waste management. For example, the government strategy to replace fossil fuel-sourced generation with renewables (e.g. from wind turbines) into the electricity grid means the grid is decarbonising over time.

The Scottish Government Draft Heat in Building Strategy states that "By 2030, we would like at least 20% of the volume of the gas in the gas grid to be green gas." Electricity and natural gas grid decarbonisation are therefore factors projected forwards for this net zero strategy.

The carbon factor for waste has increased significantly, leading to the carbon footprint being adjusted to account for this – this means an increasing carbon footprint for waste even if the volume and treatment of waste stays constant. Other carbon emissions factors are likely to change over the period of the strategy, however, we must still act to eliminate and reduce our significant carbon emitters in line with the Precautionary Principle.

This means that in the absence of absolute knowledge about the future, we will work now to anticipate, avoid and mitigate the threat of climate change and its environmental impacts.

Section 2: Routemap to Net Zero

To get to a net zero future, we accept that we have to start from now. Decisions and actions we take every year will have an impact on our current and future carbon emissions. Scottish Government policy framework identifies the requirement for net zero emissions by 2045, and with 70% reduction (based on 1990 baseline) by 2030. As the Council was not in existence in 1990, the baseline of 2012/13 has been used.

The Council has committed to delivering on the goal of net zero emissions by 2045. Due to the length of this timeline, net zero by 2045 is effectively an intergenerational goal and will require embedding of carbon footprint impact considerations in key decision-making, plan development and service delivery processes from the Council on a year-to-year basis.

To establish improvements to reduce our carbon footprint, we have identified specific carbon reduction actions as well as a change management and improvement process (the Plan-Do-Check-Act cycle) which we will use as the structure to assist us to deliver on our commitments. Our routemap to net zero emissions by 2045 involves a number of key steps, with overall timeline and goals identified as follows:
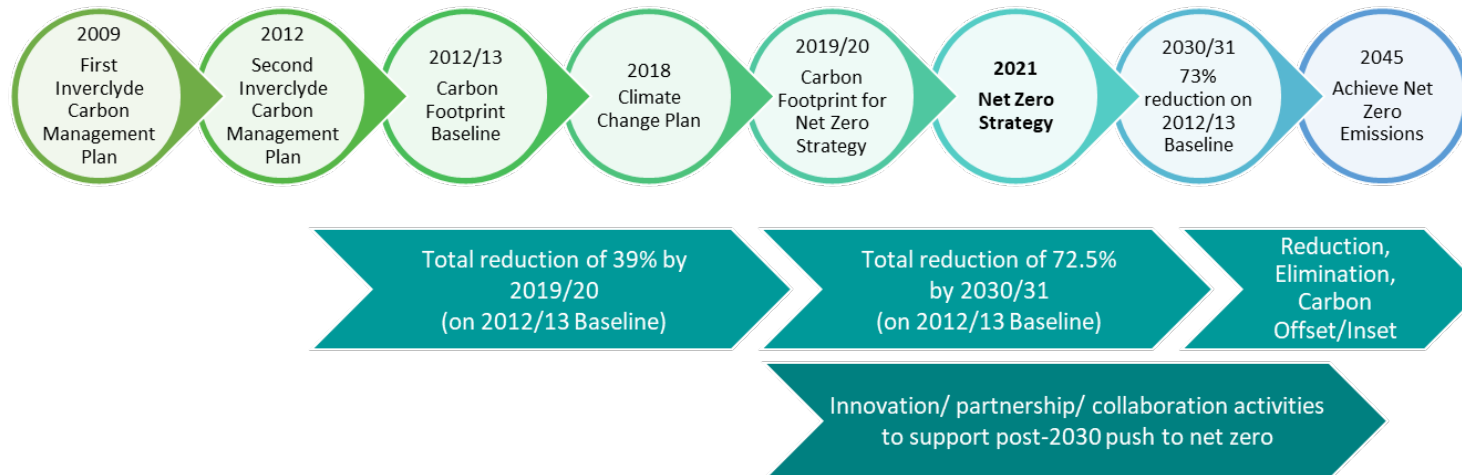

The net zero strategy therefore has two main targets:

1. Delivery of carbon footprint reductions of 73% from 2021-2030/31 (on a 2012/13 baseline) through specific identified actions supporting this strategy.
2. Improvement to Net Zero by 2045. Using the improvement process of 'Plan-Do-Check-Act' to continue to identify opportunities, partnerships, collaborations and actions to reduce or use certified carbon sinks to offset remaining emissions to zero by 2045.

**Target 1: Projected Carbon Reductions (2021-2030/31)**

In 2021 in support of this strategy, an assessment of further opportunities for reductions of significant carbon emitters was undertaken. The results of this assessment have been used within this strategy as actions to reduce emissions.

The comparison of 2012/13 baseline through to performance in 2019/20 and projected carbon reductions by 2030/31 is shown in the bar chart below which is separated by significant carbon emitters (building energy use, transport, streetlighting, waste, and water and wastewater).
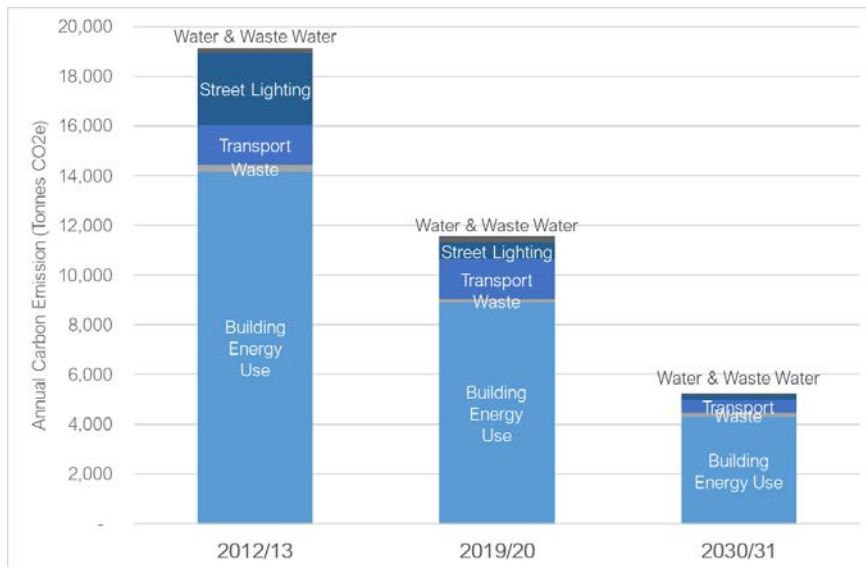

Overall, in the time period of Target 1, between 2021 and 2030/31, carbon savings amounting to a further 6,315 tonnes have been identified, as illustrated in the pie charts below.

This means that the Council's overall carbon reduction target by 2030/31 is 73% from the start of the Council's 2012/13 baseline.
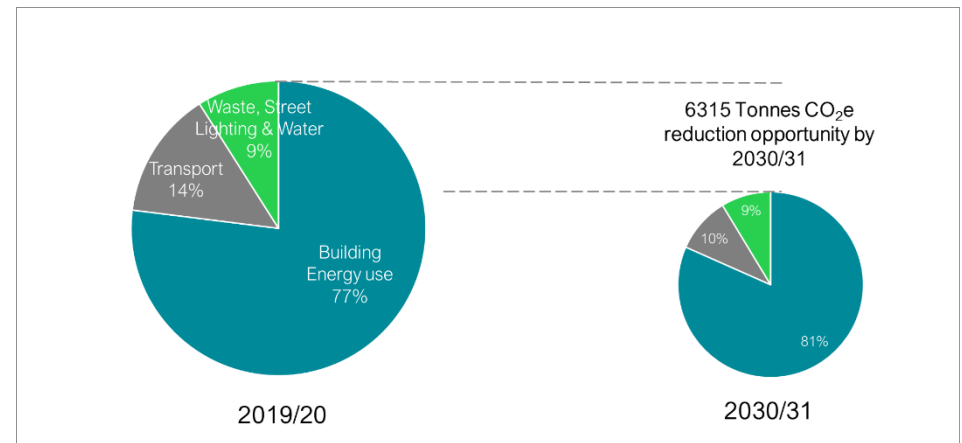
Carbon Footprint Reduction Actions - Impact Projection (2021-2030)

Providing more detail on the specific activities and scale of emissions reductions between 2021-2030/31, the total carbon emissions and the positive impact of projected actions to reduce carbon impact are shown in the 'waterfall' diagram below. The first column is the overall total carbon emissions to be reduced, with the quantity of the carbon reduction per activity in the following columns. Due to carbon emissions factors changing, waste is a carbon emissions contributor, even including proposed reduction programmes. To achieve net zero emissions, remaining carbon emissions (referred to as "Residual Carbon"), must still be managed. To meet Scottish Government goals, these remaining emissions may be reduced to zero by additional reduction measures, or via the implementation of offset projects or purchase of appropriate approved carbon offset certificates.
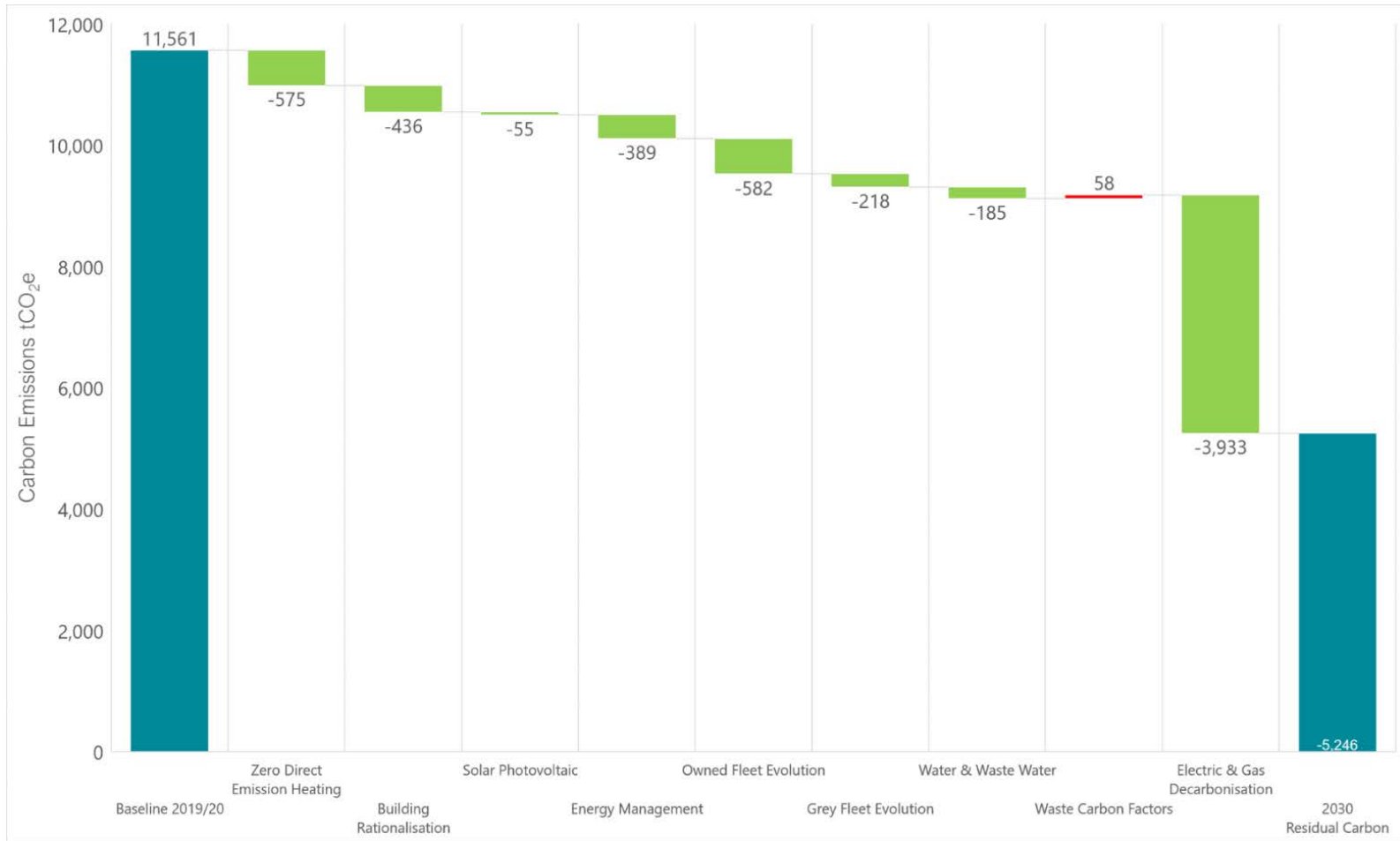
Waterfall diagram: positive impact of projected actions to reduce carbon impact (2021-2030/31)

Target 2: Improvement to Net Zero by 2045

As technology, innovation and good practice is shared over the next two decades, the Council anticipates that other net zero solutions will become viable and new solutions will be discovered. For Inverclyde, these solutions could include:

- Using the River Clyde as a source for a large scale district heating system based on a water-based heat pump
- Harnessing the tidal power from the River Clyde
- Increased use of hydrogen to fuel boilers and vehicles
- Advanced thermal insulation products to more effectively retain heat in our buildings
- Advanced thermal storage to collect heat in warmer months to utilise during winter

The Council will not be complacent. We will use the period 2021-2031 to prepare for the 2031-2045 net zero goal by using the Plan-Do-Check-Act improvement process structure.

We will review Council and Inverclyde Alliance Improvement Plans, Corporate and Directorate Plans and the Health and Social Care outcomes, with a view to updating to create a framework to support:

- Opportunities for greenhouse gas emissions reductions in current Council operations
- Opportunity identification for greenhouse gas emissions reductions in future years
- Encouragement of carbon reduction-related opportunities for entrepreneurship, job creation, education and awareness raising

Offsetting

Future improvements to net zero are likely to include carbon offsetting projects. Offsetting is an action intended to compensate for the emission of greenhouse gases into the atmosphere, and within a net zero context, the relevant offset projects are those which actually remove greenhouse gases including carbon from the atmosphere and prevent their re-emission into the atmosphere.

Offset projects now include peatland restoration and tree planting. These types of projects bring additional benefits such as supporting biodiversity, improving the areas' amenity, reduces the effect of blight and provides a cleaner and more attractive natural environment for residents and visitors. Planning and delivery of these project opportunities can be started now.

Industrial carbon offset projects currently at pilot stage and intended for wider application in the future include carbon capture and storage.

Peatland restoration

Peatland restoration offers a means of reducing the amount of greenhouse gases emitted into the atmosphere. It is also a means of slowing water flow, preventing flooding, and providing habitats, thus enhancing biodiversity.

Peatland in damaged conditions - for example as a result of drainage ditches used to create historic moorland hunting estates - emits carbon and other greenhouse gases to the atmosphere. The restoration of peatland can result in a reduced level of greenhouse gas emissions.

Much of the upland countryside area of Inverclyde is peatland. The Council has ownership of some of this peatland and in partnership with Peatland Action (part of NatureScot) has commissioned a peatland restoration feasibility study to assess the potential for restoration. The final report is expected in March 2022. Carbon emission savings from peatland depends on the condition of the peatland, ranging from 2-20 tonnes of

CO_2 per hectare (ha) per year. The area of peatland owned by Inverclyde Council that is the subject of the feasibility study is almost 2,000ha.

Tree planting

Tree planting can play a role in removing carbon dioxide from the atmosphere. Similarly to peatland restoration, this brings benefits for biodiversity and flood management and additionally can help cool urban areas during heatwaves by providing shade.

The Council is a partner in the Clyde Climate Forest project. For the Glasgow City Region area, this project seeks to increase:

- Urban tree canopy cover from 17% to 20%
- Broadleaved woodland network to 142ha, an increase of 20%
- The amount of land used for forestry/woodland in the Glasgow City Region from 17% to 20%

As an urban and rural landowner, the Council has the opportunity to help meet these targets. It has previously undertaken work with the Central Scotland Green Network (now Green Action Trust) to identify opportunities for the 'greening' of vacant and derelict land in Inverclyde including some in its ownership.

The calculation of carbon reductions from tree planting is complex and based on variables such as the present condition and soil type of the land, the type and spacing of the trees to be planted, and ongoing monitoring.

Tree planting opportunities on Council land include those on existing open spaces and vacant and derelict land. The Council has usually sought development uses for vacant and derelict land within its area. This has not always been successful, and there is a significant amount of long term vacant and derelict land. A review of the proposed future use of vacant and derelict land is proposed to be undertaken, with tree planting and other 'greening' uses viewed as a positive end-use.

Section 3: Implementation: Carbon Reduction Actions (2021-2030/31)

The Council will deliver on the following actions, to support the carbon emissions reduction target for 2030/31. These actions have been identified through independent technical review and opportunity assessment. The scale of the proposed actions relates to the significance of the carbon emission to the Council's carbon footprint. Significant carbon emitters with actions for carbon reduction improvement identified within each subsection as follows:

- A. Energy Use in Buildings

- B. Transport

- C. Streetlighting and Water

- D. Waste

A. Energy Use in Buildings

There are currently around 130 buildings in the Council/HSCP portfolio which are included in the Council's climate change reporting. Energy use in buildings is a significant carbon emitter for the Council/HSCP, accounting for nearly 9,000 tonnes CO_2e and 77% of the overall carbon footprint in 2019/20.

Carbon reduction successes to date, in addition to the decarbonisation of the electricity and gas supply, have included energy use reduction programmes, installation and use of solar panels which generate electricity at some schools, the consolidation of estate requirements, and closure/demolition of some buildings.

The Scottish Government's Programme for Government 2021-22 sets out a target of all publicly owned meeting zero emission heating requirements by 2038.

Opportunities for further improvements includes transitioning from gas to electricity for heating and canteen operations, and the consideration of installation of on-site renewable technologies including heat pumps. As the electricity grid continues to decarbonise, carbon benefits will accrue for buildings' electrical energy use. The positive impact of identified actions can be seen in the chart below.

Showing a comparison of the 2019/20 to 2030/31 projected carbon savings from proposed actions for buildings within Council building types the chart below shows educational properties to remain the main energy users within the Council's operational properties.

Year on year projections for the reduction of emissions from buildings between 2019/20 and 2030/31 are as follows:
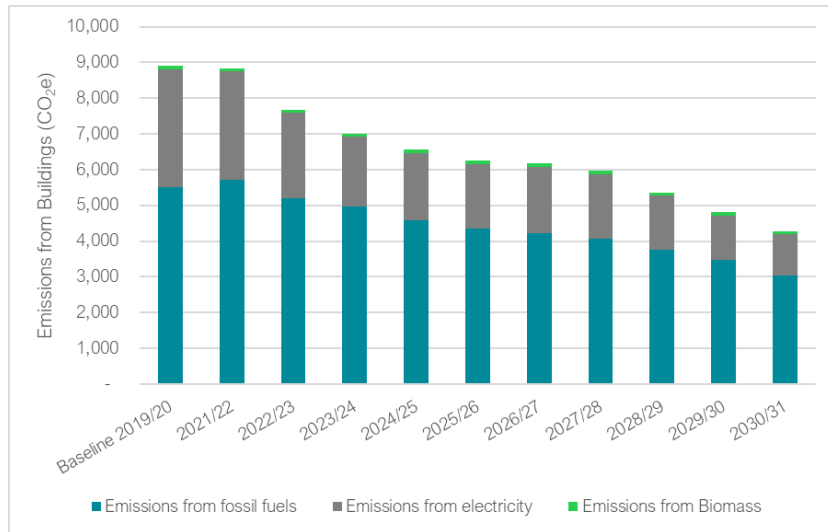
In establishing the actions for carbon footprint reductions, the Council has taken into account financial constraints. For example, when faced with choices between investing in insulation vs other low carbon infrastructure or equipment investment, the Council has considered the availability and best value spend of finance for carbon return. The Council strategy on this matter is to prioritise low carbon energy options to replace fossil fuels.

Actions for Energy Use in Buildings

- Creation of an Energy Engineer role to monitor, control and reduce energy use.

- When fossil fuel (e.g. gas) boilers reach end-of-life, these will be replaced with lower emissions alternatives, such as heat pump technology.

- Solar panels to be installed on selected buildings, where payback periods are accepted by the Council.

- Replacement of gas catering equipment with efficient electric alternatives.

- Further consolidation of Council estate, with closure of buildings where operations allow or replacement with modern efficient buildings in select cases.

- Where achievable, any new and substantially refurbished buildings to be designed to Scottish Government requirements for Net Zero Public Sector Building Standard.

B. Transport

Accounting for 14% of the 2019/20 carbon footprint, at 1,620 tonnes CO_2e, transport is a significant carbon emitter for the Council. Recorded transport emissions are from Council-owned vehicles and the authorised use of private vehicles for Council business, sometimes referred to as 'grey fleet'.

There are a wide variety of Council owned vehicles, including cars, vans and tippers, refuse collection lorries, a skip loader, road sweepers and buses. These account for around 75% of the transport carbon footprint.

Grey fleet refers to the authorised use of private vehicles for Council business. Nearly a quarter of transport emissions are accounted for through the use of grey fleet journeys.
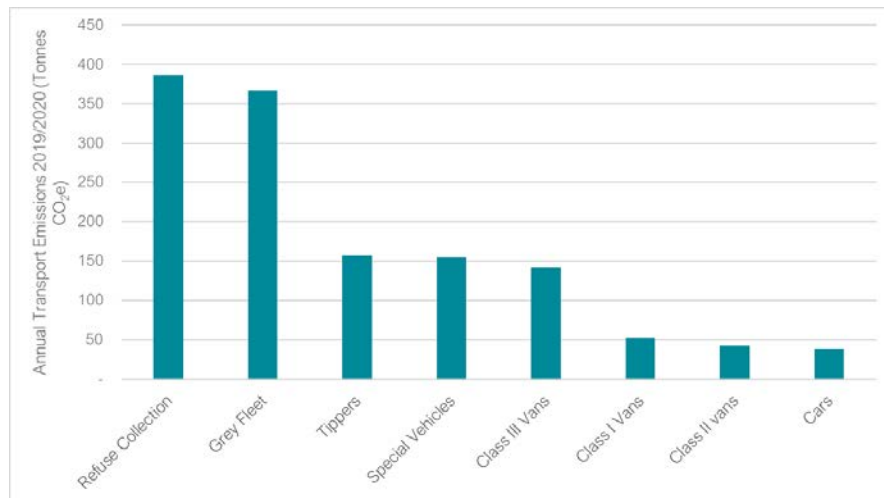
For its own fleet, the council has a strategy of vehicle replacement to take advantage of fuel-efficient engines and lower maintenance costs. Petrol- and diesel-powered vehicles will be on a programme of replacement with electric vehicles (EV) to meet Government targets by 2025. Similar Government targets for electric vehicles are in place for refuse collection vehicles, by 2028.

The chart below shows the baseline transport-related greenhouse gas emissions and demonstrates the projected reductions to 2030/31 from the proposed actions.
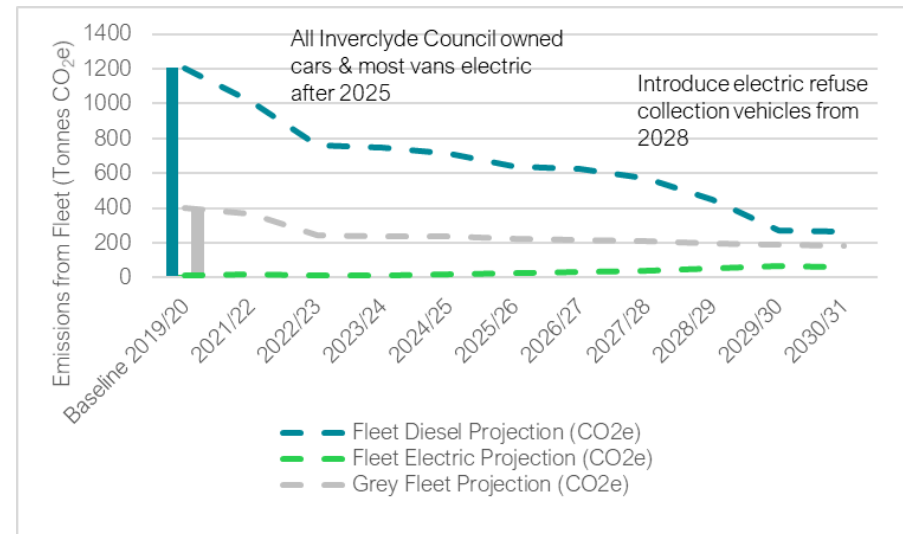
Actions for Transport

- Transport vehicle fuel choice to be prioritised towards electric vehicles where new/ replacement vehicles are required in line with Scottish Government requirements, aiming for a full electric car/van fleet by 2025, and electric refuse collection vehicles from 2028.

- Consider options on ownership models for fleet vehicles (e.g. purchase vs leasing/ shared ownership models), to maintain fleet energy efficiency. Take appropriate action to ensure access to an efficient low-carbon fleet for essential Council business.

- Review electric charging infrastructure availability, geographic locations and types vs requirements (e.g. access to fast charging points/ access to high-load charging points as needed for high-torque engines such as refuse vehicles). Build the charging infrastructure or collaborate with third parties to ensure appropriate charging points are available to support the effective use of electric vehicles for Council business.

- For authorised users of private vehicles for Council business (i.e. grey fleet users), monitor and analyse transport use, travel modes and emissions, and the effectiveness of the transport use overall. Communicate on options for private vehicle switches from petrol/diesel fuel to electric vehicles. Encourage car sharing where possible (post-COVID) and active travel, i.e. walking/cycling where possible.

- Assess and act on opportunities for Council Services to be supported by employees using active travel and public transport for transport needs, in line with the Scottish Government '20 minute neighbourhoods' concept – meeting day-to-day needs, including employment locations, within a 20 minute walk of their home; through access to safe walking and cycling routes, or by public transport.

C. Streetlighting and Water

Streetlighting

Streetlighting helps reduce accidents and can increase the perception of safety, amongst other benefits. In 2019/20, streetlighting emissions represented greenhouse gas emissions of 673 tonnes of CO_2e which is 5.8% of the total 2019/20 carbon footprint.

With over 97% of Inverclyde's streetlighting now upgraded to energy efficient LEDs, streetlights are using 61% less energy when compared to 2012/13.

As streetlights are powered using electricity from the national grid, as the grid continues to decarbonise over the coming years, the carbon footprint of streetlighting will also effectively reduce.

Actions for Streetlighting

- Replace inefficient streetlighting with energy efficient LEDs for the remaining 3% of fittings to save up to 7 tonnes of CO_2e per annum.

Water use and disposal

Water is used throughout the Council estate. There is a carbon impact from both water supply/use, and its disposal to sewer for treatment. In 2019/20, emissions from water use and disposal were 255 tonnes CO_2e, which is 2.2% of the total 2019/20 carbon footprint.

Actions for Water

- Continue to check Building Management Systems data and Automated Meter Reading data showing water usage and correct for consumption anomalies and identified leaks. Raise awareness for staff and contractors to report issues concerning consumption and leaks and minimise water use where possible.

- Invest in additional water metering where additional information is beneficial to the control of water use and disposal.

- Implement pressure-reducing washers and percussion taps where applicable.

D. Waste

The waste arisings considered to be within the scope of the carbon footprint are waste from Council operations, including offices and schools. Waste accounts for 113 tonnes CO_2e or 1% of the Council's 2019/20 emissions.

The greatest emissions reductions savings to be made are in prevention and elimination of waste, in line with the waste hierarchy (as seen in the diagram below). Waste to landfill and recycled waste all count as carbon emitters, with recycling being a fraction of the carbon footprint of the equivalent waste being landfilled.
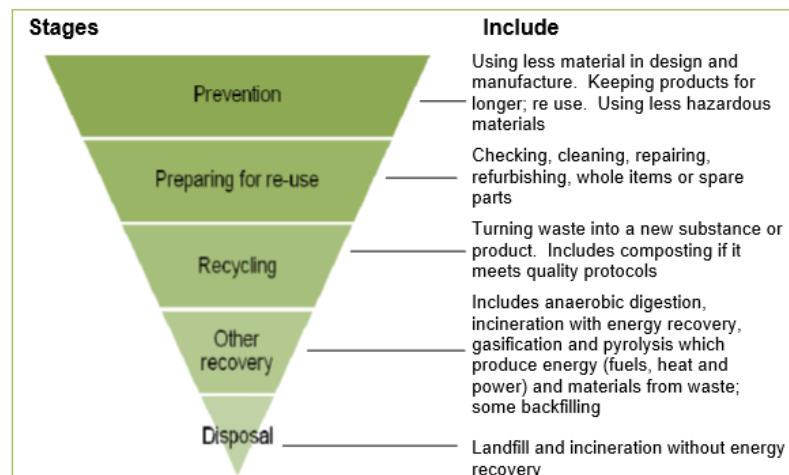
Source: DEFRA, Guidance on applying the waste hierarchy

The Scottish Government's Climate Change Plan 2018 – 2032 requires Councils to achieve national waste targets by 2025, including a ban on biodegradable municipal waste, reducing landfilled waste to 5%, reducing food waste by 33% (vs 2013 baseline) and recycling of 70% of all waste. The Climate Change Plan places an obligation on the Council to continue to investigate potential projects that will help achieve the Scottish Government's waste reduction targets.

In 2019/20, there was a total of 1,225 tonnes of internal Council waste arising.

Waste arising from residential and commercial areas in 2019/20 was a total of 41,048 tonnes of waste and the equivalent of 8,105 tonnes CO_2 emissions. These wastes are currently excluded from the carbon footprint of the Council to align with Public Bodies Duties Climate Reporting requirements. As the Council has statutory duties for compliance with national waste improvements, overall waste improvement actions which cover both internal and external Council waste are as follows:

Actions for Waste

- Compliance with the biodegradable municipal waste ban in 2025.

- To meet the targets for reducing the proportion of total waste sent to landfill to a maximum of 5% of all waste by 2025, the Council is working with other authorities (West Dunbartonshire Council), where we have shared services, to form a joint approach to meeting the requirements of the 2025 ban on biodegradable municipal waste.

- Increase recycling of all waste (including commercial and industrial) by 70% by 2025.

- Complete the upgrade (2021/22) of the second household waste recycling centre to accommodate an increase in service coverage and residents' access to recycle more materials.

- Participation in the national Deposit Return Scheme, in line with other local authorities in Scotland.

- The Council is in the process of preparing a strategy to improve the existing bin collection system and considering different sizes of waste bins for different waste streams.

- A feasibility study has been completed by Zero Waste Scotland. The specific impacts of this project on waste are to be determined once the new collection system has been put in operation.

- Waste prevention: focus on responsible consumption, responsible production, maximising value from waste and energy.

- Aligning with circular economy opportunities, the Council is currently seeking for funding to launch a furniture/white goods/electrical items recycling facility at their biggest Waste Recycling Centre. The waste products are to be tested in a built-for-purpose building and sold back to the community.

- The Council plans to continue to visit schools, nurseries, colleges and wider community to raise public awareness of the benefits of waste prevention, reuse and recycling through education and communications.

Waste arising from residential properties

Although excluded from the Council's carbon footprint, waste arising from Council residents is the most significant waste stream the Council manages (comparing residential, commercial and internal Council waste). Residential waste accounts for 65% of overall waste managed.

In 2019/20, waste arising per person area was 346kg per person on average with recycling rates of 34%.

The proposed measures to improve recycling and re-use infrastructure will help enable a reduction of waste to landfill.

Every resident can help reduce the impact of waste by reducing and eliminating it where possible, and taking advantage of recycling opportunities to help double recycling rates to a minimum of 70%.

Section 4: Awareness and Behaviour Change

Based on the significant carbon emitters identified in this Strategy, energy use in buildings and transport are priority areas of focus.

Technology and grid decarbonisation are providing carbon reduction solutions for the energy which we need to use. Energy which is used unnecessarily – for example, heating, lighting, and vehicle fuel - is a waste and generates a carbon footprint, which users can help to minimise.

As the users of energy in buildings and vehicles, all Council staff and users of Council services have a part to play in reducing the Council's carbon footprint. By raising awareness of how individual actions contribute to carbon footprint and climate change, actions to improve usually follow. Making changes to reduce our own carbon footprint can have a positive economic as well as environmental impacts.

Awareness and behaviour change can enhance the speed of the shift from a wasteful 'linear' society (of single use items, or 'take, make, dispose') to a circular economy (where goods are kept in use for longer, re-use and extending life is a key goal, and waste is

minimised). The circular economy is a focus of Scottish Government policy.

Behaviour change can go beyond the reduction of carbon emissions to provide a positive framework to encourage climate opportunities in the Inverclyde Council area. This can generate economic as well as environmental benefits, new jobs, reduction of waste and mitigation of future climate impacts.

Awareness and Behaviour Change Actions

- Development of further awareness across the Council service areas in respect of carbon footprint and emissions using life cycle assessment (LCA) techniques from those procuring goods and services through to users of the goods and services.

- Education around Council employees' role in the net zero delivery and climate actions. They will be empowered to highlight where policies and practice may work against the transition to net zero, so that solutions may be found.

- Continue to promote energy conservation and environmental sustainability within schools through

the Schools Green Charter programme.

- Looking beyond its own carbon footprint, the Council will work with partners (e.g. Zero Waste Scotland, the Energy Saving Trust and Business Gateway) to provide access to information on how to:

    - Reduce home energy bills
    - Embrace a more circular economy
    - Reduce organic waste e.g. food waste
    - Encourage climate opportunity in business and social enterprise

- The Council will seek out partnerships and collaborations with the community, offering support to local organisations on climate conversations and will contribute to carbon literacy training for citizens, local businesses and start-ups.

Section 5: Governance

As at 2021, corporate responsibility for climate change rests with the Council's Environment and Regeneration Committee, with actions co-ordinated by the officers of the Climate Change Group.

Delivery of this net zero strategy for the Council will be managed in line with our Plan-Do-Check-Act improvement cycle model. Our aim is to make continual improvements on our carbon footprint.

Plan
The Council's corporate planning structure includes the Inverclyde Alliance Outcomes Improvement Plan, the Council's own Corporate Plan and Directorate Plans. Each of these documents are due for review in 2023. The HSCP has a Strategic Plan covering activities to 2024. Future Plan reviews will embed the Council's commitment to net-zero, and where appropriate, include carbon reduction targets. For Council service areas with significant carbon emissions, Plans should include actions for how emissions will be reduced.

The Council's Corporate Risk Register, Directorate Risk Registers and individual service risk registers are used to identify and manage risks. Climate change impacts and not meeting climate-related legislative targets constitute risks which should be managed. Climate change impacts identified by the Council to date include the risk of flooding and expenditure on sea defences from rising sea levels.

Working in collaboration with the Climate Ready Clyde adaptation partnership, additional climate impacts will be considered by the Council in order to assess and mitigate where necessary.

Do
The actions identified in this strategy will be implemented by the relevant service areas with the support of the Climate Change Group.

The Climate Change Group will:

- Provide technical support around carbon literacy.
- Provide carbon footprint support – in particular around significant carbon impacts and including Scope 3 emissions.
- Provide support for implementation of actions.
- Identify new opportunities for reductions.
- Identify collaborations and partnerships both internal and external to the Council to help enable the net zero future.

Check
As part of its Public Bodies Duty Reporting, the Council will undertake annual checks on progress towards net zero and delivery of the projects identified to achieve this.

Internal Audit support will be provided to check Council progress against agreed targets and actions, including:

- Climate impacts and opportunities within plans, programmes and risk registers.

- Meeting established targets for carbon emissions reductions.

Act - Improvement and Future Change
As the Council is required by the Climate Change (Scotland) Act 2009 to undertake annual reporting to Scottish Government on climate change, there is both legislative and public accountability for the progress and impact of the Council's activities towards net zero.

'Act' is the last stage of the Plan-Do-Check-Act cycle before the cycle begins a new iteration of planning improvements.

The Council has identified initial priority areas of focus, with actions for the period 2021-

2030/31 and will report on these annually vs the goal of 73% carbon reduction by 2030/31 and improvement to net zero by 2045.

As continued improvements for 2031-2045 are established, we will continue to **act** on an annual basis to track and report our progress, take on board corrective actions, lessons learned and improvement actions.

Finance is a key area of support for the implementation of a net zero future. It is also a challenge as the Council generally does not have confirmed budgets for future years. The Council's Financial Strategy 2021-31 highlights that following the 2022/23 period, main issues impacting on the revenue budget include:

Costs associated with sustainability including waste disposal and recycling, energy and fuel costs and general procurement inflation due to increased global demand for raw materials.

The increasing cost of energy and the costs of projects to reduce the Council's carbon footprint will become more significant in Council budget planning.

Sustainability means balancing the social, environmental and economic needs of Inverclyde. In turn the climate emergency is bringing to light new opportunities for education, innovation, business development and diversification. Balancing the case for sustainability are the opportunities which climate change and climate action present.

In moving to net zero emissions by 2045, the Council will take into account potential significant carbon impacts of procurement decisions (around purchased goods and services, for example) and delivery models (e.g. the operational model for Inverclyde Leisure for whom the Council manage buildings). The carbon emissions from these areas have not previously been considered in scope. Whilst this forms an additional challenge, it also forms an additional influencing opportunity. Purchasing in particular can influence new opportunities for lower-carbon emissions options. It is anticipated that considering significant carbon emissions for life cycle of purchased goods and services will help deliver on future carbon savings, stimulate economic growth and training opportunities. This will be one of the areas for future improvement, through the Plan-Do-Check-Act improvement cycle.

Act - Improvement and Future Change - Actions

- The Council will review overall progress and provide an annual update on carbon footprint improvements, including any corrective actions.

- The Council will communicate with employees on their own role in net zero emissions goals. For staff with significant influence over carbon emissions, appropriate and accountable actions will be built into personal development plans.

- The Council will report on the actions and results of progressing collaborations and partnerships for a net zero future. New collaborators as well as established partners such as the Inverclyde Alliance will be considered. Reporting will include updates on successes and lessons-learned to improve the approach to future collaborations.

- The Council will establish a framework for low-carbon procurement requirements. It will establish a Supplier Development Programme to raise awareness of greenhouse gas emissions associated with goods and services, and future Council requirements to be met.

- The Council will continue to review the carbon emissions that it includes within

its reporting, and where appropriate add these, and consider reduction in future strategies. These could include emissions from Inverclyde Leisure properties and the commercial properties that the Council leases to tenants, external municipal waste, commuting to Inverclyde Council premises and business travel by public transport, and home working.

Section 6 – References, Acronyms & Glossary

References:

The United Nations, 2015. Paris Agreement

Climate Change Act 2008, as amended

Climate Change (Scotland) Act 2009

Scotland's Zero Waste Plan (2010)

Waste (Scotland) Regulations 2012

Procurement Reform (Scotland) Act 2014

Climate Change (Duties of Public Bodies: Reporting Requirements) (Scotland) Order 2015

Making Things Last – A Circular Economy Strategy for Scotland (2016)

Climate Change (Emissions Reduction Targets) (Scotland) Act 2019

The Scottish Government, 2020. Update to the Climate Change Plan 2018 – 2032: Securing a Green Recovery on a Path to Net Zero.

The Deposit and Return Scheme for Scotland Regulations 2020

A fairer, greener Scotland Programme for Government 2021-22, September 2021

Acronyms and Glossary:

BEIS - Department for Business, Energy & Industrial Strategy

Carbon footprint – a method to measure the greenhouse gas emissions associated with, for example, an organisation, person, event, building etc.

> Scope 1 – direct emissions from fuel/combustion e.g. heating/ fleet vehicles etc
>
> Scope 2 – indirect emissions from electricity grid etc
>
> Scope 3 – indirect emissions e.g. from purchased goods and services, waste, water, employee commute etc

CO_2 Carbon dioxide – a gas released from the burning of fossil fuels which contributes to man-made climate change and global warming

CO_2e Carbon dioxide equivalent – a metric used to compare the cumulative impact of different greenhouse gases.

Carbon sink – anything absorbing more carbon from the atmosphere than it releases – e.g. plants, the ocean and soil.

Carbon neutrality - making or resulting in no net release of carbon dioxide into the atmosphere, especially as a result of carbon offsetting.

Carbon offsetting - an action intended to compensate for the emission of carbon dioxide into the atmosphere as a result of industrial or other human activity, especially when quantified and traded as part of a commercial scheme.

Carbon insetting - refers to an organization offsetting its emissions through a carbon offset project within its own value chain. In contrast to a typical carbon offset project, emissions are avoided, reduced or sequestered upstream or downstream within the organisation's own value chain.

EV – Electric vehicle

GHG Protocol – Greenhouse Gas Protocol, the widely-used methodology for greenhouse gas accounting for calculation of carbon footprint.

HSCP – Health and Social Care Partnership

LCA - Life Cycle Assessment – technique to measure life cycle environmental impact.

Materiality Assessment – process of identifying potential errors within a carbon footprint (in line with Scope 3 GHG Protocol reporting guidelines), used for assurance.

Net zero - refers to the balance between the amount of greenhouse gas produced and the amount removed from the atmosphere