Annual Greenhouse Gas Report 2023/24

July 2024

South Ribble Borough Council

CLIMATE EMERGENCY

Contents

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Related Documents	SRBC Climate Emergency Action Plan 2021 SRBC Climate Emergency Strategy 2022 SRBC Greenhouse Gas Report 2023 All related documents may be viewed via the SRBC website South Ribble Borough Council	
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Review of Strategy

Review Date	July 2025
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Greenhouse Gas Emissions (GHG) from Local Authority own estate and operations for financial year 2023/24

1.0 Introduction

In 2019 South Ribble Borough Council declared a climate emergency, committing to the Borough becoming carbon net zero by 2030.

The Council's Climate Emergency Strategy and Action Plan affirms the Council's own commitment as a major local employer, energy user and community leader in leading by example in reducing its own corporate carbon emissions.

To this end the Council has commenced an accelerated route to tackling greenhouse gas emissions arising from our own estate and operations, particularly the powering and heating of our largest buildings, whilst also addressing our water consumption, and transition to electric fleet vehicles.

This report provides an annual overview of Greenhouse Gas (GHG) emissions from the Council's estate and operations to the end of March 2024.

The majority of the Council's greenhouse gas emissions come from:

- Gas and electricity consumption in Council operational sites (e.g. Civic Centre, Moss Side Depot, and leisure centres)
- Fuel for Council fleet vehicles.
- Water consumption in Council operational sites

The GHG emissions have been calculated using guidance and emissions factors published by the Department for Energy, Security and Net Zero. Where UK emissions factors are not yet available the Council has estimated carbon emissions using the methodology of One Carbon World, as used for the first detailed carbon footprint calculations for the period of 2018/19. The links to source material are provided as references.

2.0 Results

A summary of Greenhouse Gas emissions for 2023/24, along with previous reporting years, is outlined in Table 1 below.

Table 1 – GHG emissions reported as kilograms of carbon dioxide equivalent (kg CO_2e).

	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
Scope 1						
Natural Gas	218,422.70	199,093.47	143,663.47	895,024.71	848,044.37	724,264.52
Petrol for Council vehicles	10,694.30	12,445.73	12,537.66	11,290.05	11,565.90	10,487.37
Diesel for Council vehicles *	714,557.63	1,326,358.07	1,370,161.32	1,218,887.05	841,224.98	635,552.16
Gas oil / Red diesel	70,091.68	67,634.07	66,018.02	68,964.25	50,763.21	60,618.99
Other, including lubricants, weed killer, antifreeze, etc.	20,469.79	35,363.24	32,226.52	21,721.55	25,355.87	26,523.30

2023/24 results show an increase in gas oil and red diesel. The conversion factor for gas oil has not changed, the usage has increased from 18402 litres for 22/23, to 22,000 litres for 23/24

For the year 2023/24 the Council has started to include Auto Transmission Fluid (ATF) within the Other category and will continue to include this going forwards. The inclusion of this provides for an additional 3,024 kg CO_{2e} within the category of Other within Scope 1.

More details on conversion factors can be found in section 3.3.

Details of major changes in conversion factors for the previous 12 months can be found at https://assets.publishing.service.gov.uk/media/647f42fc103ca60013039a71/2023-ghg-cf-major-changes-document.pdf

	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
Scope 2						
Electricity	117,441.21	197,654.71	134,636.72	381,690.03	372,646.70	451,868.02

For 2023 / 2024 Scope 2 results show a higher CO2e value. This is due to the changes in the conversion factors as a direct result of the war in Ukraine and will be the same for everyone reporting on Scope 2 emissions this year. Overall, the raw data for our electricity usage has increased from 1,927,018 kWh to 2,182,154 kWh (+ 255,136kWh)

More details on conversion factors can be found in section 3.3.

Details of major changes in conversion factors for the previous 12 months can be found at https://assets.publishing.service.gov.uk/media/647f42fc103ca60013039a71/2023-ghg-cf-major-changes-document.pdf

	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
Scope 3						
Business travel	Not included	32,515.00	15,181.15	24,520.04	21,351.89	16,563.35
Water supply	Not included	5,285.51	3,005.92	3,183.09**	3,343.88	5,080.62
Waste water	Not included	10,865.68	6,179.42	5,810.74**	6,104.27	5,788.97
Other, including electricity generation, transport and distribution, material use, waste disposal and well to tank ***calculations for all fuels	634,804.23	757,236.27	666,569.32	742,865.66	728,025.57	567,408.56
Total gross emissions	1,786,482	2,644,452	2,450,179	3,373,957	2,908,426	2,504,156
Carbon offsetting	300 tonnes from One Carbon World					
Total annual net emissions	1,786,182	2,644,452	2,450,179	3,373,957	2,908,426	2,504,156

Water usage results have increased, due to an increase in water usage combined with an increase in conversion factor for water supply,

Water treatment results have decreased due to a reduction in the conversion factor for wastewater.

	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
Intensity measurement (kg CO2e per No. FTE employees) ****	6,603	9,794	8,292	10,188	7,895	8,417
Intensity measurement (kg CO2e per total number Employees) ****	5,895	8,800	7,470	8,341	6,513	7,717

*In April 2019 Chorley FCC began to operate from the SRBC depot, including supply of fuel from the depot. As the service has operated directly by SRBC from 11 June 2022, FCC no long sold fuel)

The pandemic lockdown restrictions were introduced in March 2020

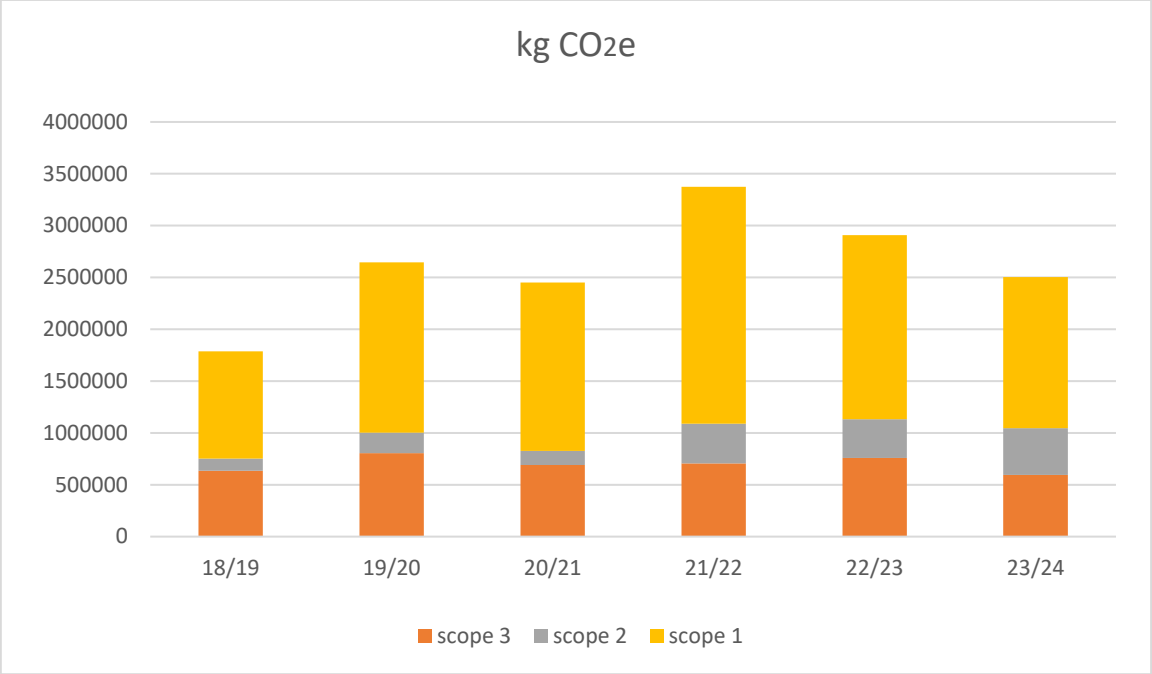
**The Council's water usage increasing from April 2021, due to operation of the leisure centre returning to Council control

***Well to tank is the energy usage in the fuel supply chain, ahead of the fuel being utilised by the Council (including extraction, refining and transportation of primary fuels)

****Those staff employed in a shared service arrangement with Chorley Borough Council are classed as 0.5 of a post for the purposes of these calculations.

Our overall intensity measure of kg of CO2e / number of employees has risen. This reflects the changes in reporting figures in the above three tables and changes in staffing numbers over the previous 12 months, as staff numbers have decreased slightly the emissions value per employee increases

Figure 1 – Annual changes in emissions



Notes –

- From April 2019 onwards the data includes staff travel, water consumption and wastewater within the Scope 3 emissions.
- From April 2019 FCC began to operate from the SRBC depot, including supply of fuel from the depot (This service was brought back in house from 11 June 2022).
- The pandemic lockdown restrictions were introduced in March 2020
- From April 2021 the operation of the leisure services, including 4 leisure centres, was brought in house and have been included within the GHG emissions.

Table 2 – South Ribble Borough Council's operational scopes

Scope 1 (direct)	Scope 2 (energy)	Scope 3 (other indirect)
Fuel used for heating Council operated buildings (not tenanted buildings)	Electricity consumption within operated Council Buildings (not tenanted buildings)	Employee business travel
Fuel consumption from SRBC fleet vehicles		Electrical transmission and distribution
Chemical use such as anti-freeze, weed killer, Ad Blue, engine oil, etc.		Waste disposal
		Water consumption (from April 2019)
		Wastewater (from April 2019)
Excluding	Excluding	Excluding
Refrigerant emissions from air conditioning and other equipment		Some material uses and disposal, including items such as books, tyres, clothing / uniforms, and electrical items
		Employee and elected member commuting

3.0 Supporting Information

3.1 Organisation Information

South Ribble Borough Council is responsible for providing a wide range of services to residents of the Borough, those visiting the Borough and to businesses operating within the Borough.

The Council serves a population of approximately 111,000 and has approximately 325 employees, either employed solely by SBRC or in a shared service agreement with Chorley Borough Council.

The carbon footprint boundary includes those activities under the operational control of the Council, under Scopes 1,2 and 3 of the Greenhouse Gas Protocol.

In April 2021 the operation of four leisure centres transferred back into Council control and so the data for April 2021 onwards includes the four leisure centres. However, it is

anticipated that in future the emissions arising from the operation of the leisure centres will be reduced significantly as a result of the heat decarbonisation works.

The Council has received over £4 million grant funding to undertake heat decarbonisation works at 4 of our largest energy using buildings within our estate -

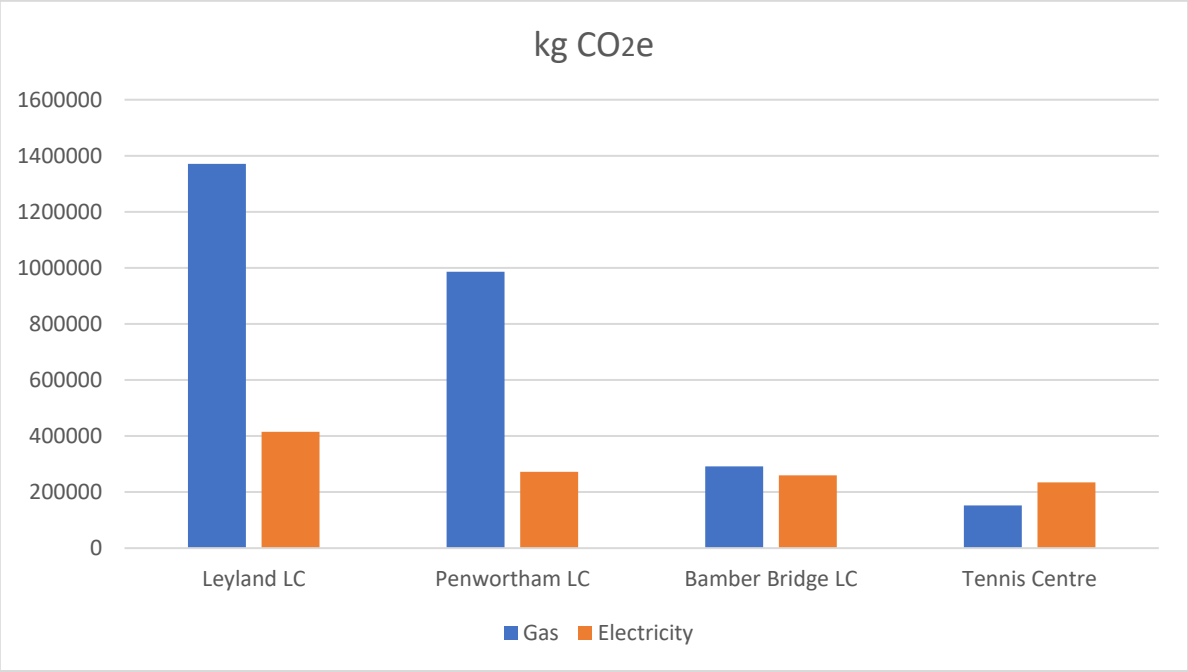
- Leyland Leisure Centre
- Penwortham Leisure Centre
- Bamber Bridge Leisure Centre
- South Ribble Tennis and Fitness Centre

In addition, the Civic Centre has previously received grant funding for the provision of solar panels, solar battery storage, LED lighting, and water heaters.

During 23/24 works have progressed to remove mains gas as a primary source of heating, introduce new heating technologies, e.g. air source heat pumps, and improve our use of renewable energy. The technologies are presently being installed but the final commissioning date is yet to be provided by the local distribution network operator (DNO), Electricity NorthWest. In future this reduced reliance on mains gas, and the resulting reduction in carbon emissions, will be evidenced.

In order to report the difference in emissions that these works provide, the energy use for these 4 buildings is given below, as a baseline for future greenhouse gas reports. This data has already been included within Table 1 above, so Figure 2 below represents the baseline energy use preceding commissioning of the heat decarbonisation works.

Figure 2 – Carbon emissions from gas and electricity at the 4 leisure centres



3.2 Reporting Period

For the period 2018/2019 One Carbon World calculated the annual GHG emission report for the Council

For each year since the Council has undertaken these assessments internally, using the methodology and data provided by the Department for Energy, Security and Net Zero. Where this data does not provide for activities undertaken by the Council (for example the use of engine oil and weed killer) then these have been estimated using the data and methodology of One Carbon World. As the UK provides for the calculation of emissions from such goods, the Council will transfer to the use of the UK methodology and data.

This report is for the period 1 April 2023 – 31 March 2024.

3.3 Operational Scope

This report includes Scope 1, 2, and 3 emissions.

Scope 1 emissions are direct emissions resulting from the Council's activities, including the use of fuels and chemicals.

Scope 2 emissions are indirect emissions, associated with the use of electricity. These indirect emissions arise as a result of the Council's electricity consumption, but the emissions occur at sources not owned or controlled by the Council.

The Scope 1 and Scope 2 emissions have been measured for all properties and vehicles that the Council owns and controls. Those buildings within the Council estate that are rented out have been excluded from the scopes.

Scope 3 emissions are other indirect emissions, where the choices and actions of the Council result in emissions occurring at sources not owned or controlled by the Council, for example consumption of goods and waste disposal.

Scope 3 emissions are reported based on the availability of comprehensive and reliable data. The Council will continue to improve the capture of GHG emissions data, which will allow for future enhanced reporting of Scope 3 emissions. For example, the original calculation for 2018/2019 did not include staff travel, water use and wastewater. These have been added from April 2020 to more accurately reflect the full range of activities and fuel usage.

In April 2021 the Council's leisure services transferred back to Council control from a partner organisation. Therefore, from April 2021 our emissions calculations also include leisure services and their staff.

The activities / emissions included within these calculations are:

- Fuels
- Material use
- Transmission and Distribution
- UK electricity
- Water use and water disposal
- Other waste disposal

- Additional factors (WTT – well to tank related emissions) for fuels and electricity

Links to the precise methodology and data utilised are provided as references below, but as a guide the Greenhouse Gas equivalent (CO_2e) emissions are calculated by multiplying the resources used during the reporting year by the relevant emissions factor for that year.

SRBC annual data x emission factor = Greenhouse Gas emissions

All conversion factors used in this report are in kilograms of carbon dioxide equivalent (kg CO_2e).

Each year, the conversion factors are reviewed and updated. For the 2023 conversion factors there have been some significant changes, including for electricity, water supply, and wastewater from the 2022 conversion factors.

The reasons for these changes include,

Electricity – increase of 7%– increase in natural gas usage and decrease in renewables compared to 2022

Water supply – increase of 19% - improved methodology for conversion factor calculations

Water treatment – decrease of 26% - also improved methodology for conversion factor calculations

A full copy of the major changes can be found at https://assets.publishing.service.gov.uk/media/647f42fc103ca60013039a71/2023-ghg-cf-major-changes-document.pdf

3.4 Assumptions and / or Omissions

To maintain consistency of reporting the same assumptions are used in each of the accounting periods –

Emissions from waste production have been calculated over a 52-week period and using 0.5 tonnes weight for a full 1,100 litre bin.

Emissions from use of lubricant and hydraulic oils based on assumption that 1,149 litres weigh 1 tonne

Other emissions not included in the scope of this report include emissions from leased commercial properties (such as industrial units), or Council owned housing stock where the tenants pay the utility bills.

3.5 Limitations of Assessment

To date, gas and electricity has been measured as a whole for the entire Council estate. In order to better understand our consumption and evidence the effect of future heat decarbonisation plans, the report also includes specific calculations relating to the use of energy at the Council's largest energy using buildings –

- Leyland Leisure Centre
- Penwortham Leisure Centre

- Bamber Bridge Leisure Centre
- South Ribble Tennis and Fitness Centre

3.6 Carbon offsetting

The Council has not committed to the use of carbon offsetting, prioritising instead carbon reduction measures.

However, in 2019 the Council commenced a programme to plant 110,00 trees across the Borough – one for each of our residents. Whilst this is not provided as an off-setting figure it forms an important part of the Council's response to the climate emergency and improving biodiversity across the Borough.

To date, this programme has seen the planting of 173,197 trees within the Borough.

4.0 Changes in Emissions

4.1 Scope 1, 2 and 3 Emissions

When One Carbon World was employed to calculate the GHG emissions for the Council's activities for 2018-2019, the resulting report made the following recommendations:

> 1.*'The amount of natural gas used is reviewed and if possible reduced. As natural gas is primarily used for heating purposes, there could be some very quick wins with a thorough audit of the system. On the back of the audit and identification of energy use over time, there could be better/more efficient methods to insulate Council buildings, improve heating systems, or supply alternative/renewable energy sources for heating, e.g. infrared panel heaters, air source heat pumps (ASHPs), ground source heat pumps (GSHPs), solar thermal, solar PV plus others.'*

In 2020, the Council was awarded a Public Sector Decarbonisation Scheme round 1 grant of £145,004. This provided heat decarbonisation measures at the Civic Centre, Leyland including the installation of further solar PV panels, the installation of LED lighting, and the provision of an improved building management system, to allow for better energy control and efficiency within the building.

In 2021, the Council was awarded a further grant under round 3 of the Public Sector Decarbonisation Scheme. These works have continued during 2023 and see the removal of mains gas as the primary heat energy source from the Council's largest energy using buildings, the leisure centres. This will improve the energy efficiency of the buildings and increase our use of renewable energy sources. It is anticipated that this will have a significant impact upon the Council's carbon footprint.

> 2.*'The amount of diesel/petrol used is reviewed and if possible reduced. On the back of a thorough audit and identification of diesel/petrol use over time, better/more efficient use of vehicles can be achieved through planning to reduce journey numbers. Also, more and more hybrid and electric vehicles are available in the marketplace with much lower emissions. By phasing out over time vehicles that run on diesel/petrol and replacing them with vehicles that use hybrid technology or that are electric powered, South Ribble Council will be able to reduce the carbon footprint of its operations (and potentially reduce fuel costs).'*

The Council has a rolling programme to replace end of life fleet vehicles with electric vehicles, where technology allows.

The Council is working to ensure that as our electric vehicle fleet increases, we will have the infrastructure installed to meet this changing demand.

> 3.'*To effectively monitor the Carbon Footprint of South Ribble Council over time, it is also recommended that a relevant performance indicator is chosen e.g. tonnes CO_2e per Employee.'*
>
> *4305.41 tonnes CO2e / 250 employees = 17.22 tonnes of CO2e per person per year.*
>
> *Other performance indicators could also be used, such as those based on financial data*
>
> *e.g. $KgCO_2e$ per £, with the cost indicator linked to financial turnover and/or profit.'*

This has been implemented as part of the data provided within Table 1 of this report, with both options of total number of employees and full-time equivalents (FTE) provided to allow representative benchmarking

Renewable energy installations

During 2020 and 2021 the Council installed an array of PV solar panels and a solar battery package at the Civic Centre, Leyland.

During 2023/24 the installation of solar panels has progressed at the Council's leisure centres, works which will continue into 24/25. These installations form part of the wider decarbonisation works at the leisure centres to reduce the greenhouse emissions arising from the operations.

Similarly, for Council projects going forward such as the Extra Care / Jubilee Gardens facility and the Leyland Town Deal, renewable energy installations form an integral part of their design.

Purchase of renewable energy

The Council's Climate Emergency Action Plan provides a commitment that '*All electricity will be purchased via green tariffs',* which will be actioned on a '*rolling programme as present Council tariffs expire.'*

As the Council is able to move its estate to green energy tariffs this will further reduce the greenhouse gas emissions arising from the heating and use of the Council's estate.

Progress towards net zero target

It is anticipated that as the decarbonisation works to the Council's largest energy using buildings are commissioned within the coming months, that the decrease in the use of mains gas, and increase in use of solar powered electricity will provide for a significant reduction in greenhouse gas emissions.

Further to this as the Council transitions to green energy tariffs, then the greenhouse gas emissions associated with electricity use, will also reduce.

4.2 Carbon Emission Factors

These are revised and published on an annual basis, for the calendar year. The annual Greenhouse Gas emissions depend not only on the resources used by the Council, but the national emission conversion factors, which may change annually. Links to the emissions factors are provided as references.

4.3 Intensity measurement

We have taken the approach of measuring the Council's emissions per total number of employees, and also per full time employee equivalent so we are able to benchmark against other organisations, to learn from best practice and help others in making improvements within their own organisations.

For the year 23/24 the intensity measurements have risen slightly owing to changes in staff numbers. The intensity measurements for each year are provided in Table 1, above.

Those employees classed as shared service employees with Chorley Borough Council will be classed as 50% SRBC employees, 50% Chorley Borough Council employees for the purposes of the GHG emissions calculations.

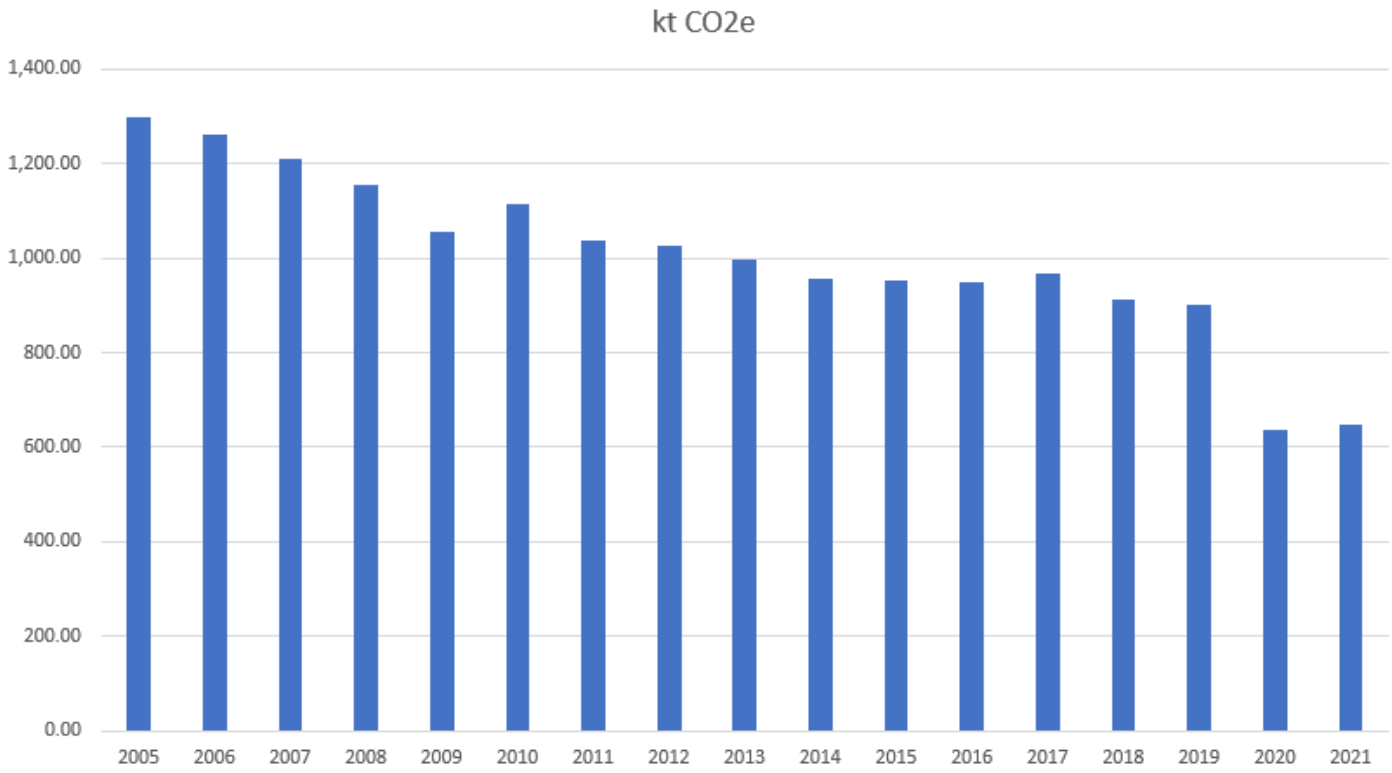
5. Borough of South Ribble emission levels

Supplementary to the Borough wide information within the Council's Climate Emergency Strategy 2022, national data, *'UK local authority and regional greenhouse gas emissions national statistics, 2005 to 2021'* shows that Borough wide greenhouse gas emissions have decreased over recent years, with a slight increase from 2020 to 2021.

This is in line with trends across other areas of the UK. The Department for Energy Security and Net Zero have stated that *'Between 2020 and 2021, greenhouse gas emissions increased in 358 out of the 374 local authorities in the UK (96%). This is consistent with the increase in overall UK emissions in 2021, which increased by 5% largely due to COVID-19 restrictions easing and colder temperatures increasing the use of heating in buildings, though emissions were still lower in 330 local authorities (88%) than they were in 2019.'*

Figure 3 below, provides the total greenhouse gas emissions for the Borough, from the first available year of 2005 to the most recent year of 2021.

Figure 3, South Ribble total greenhouse gas emissions estimate from the Office for National Statistics



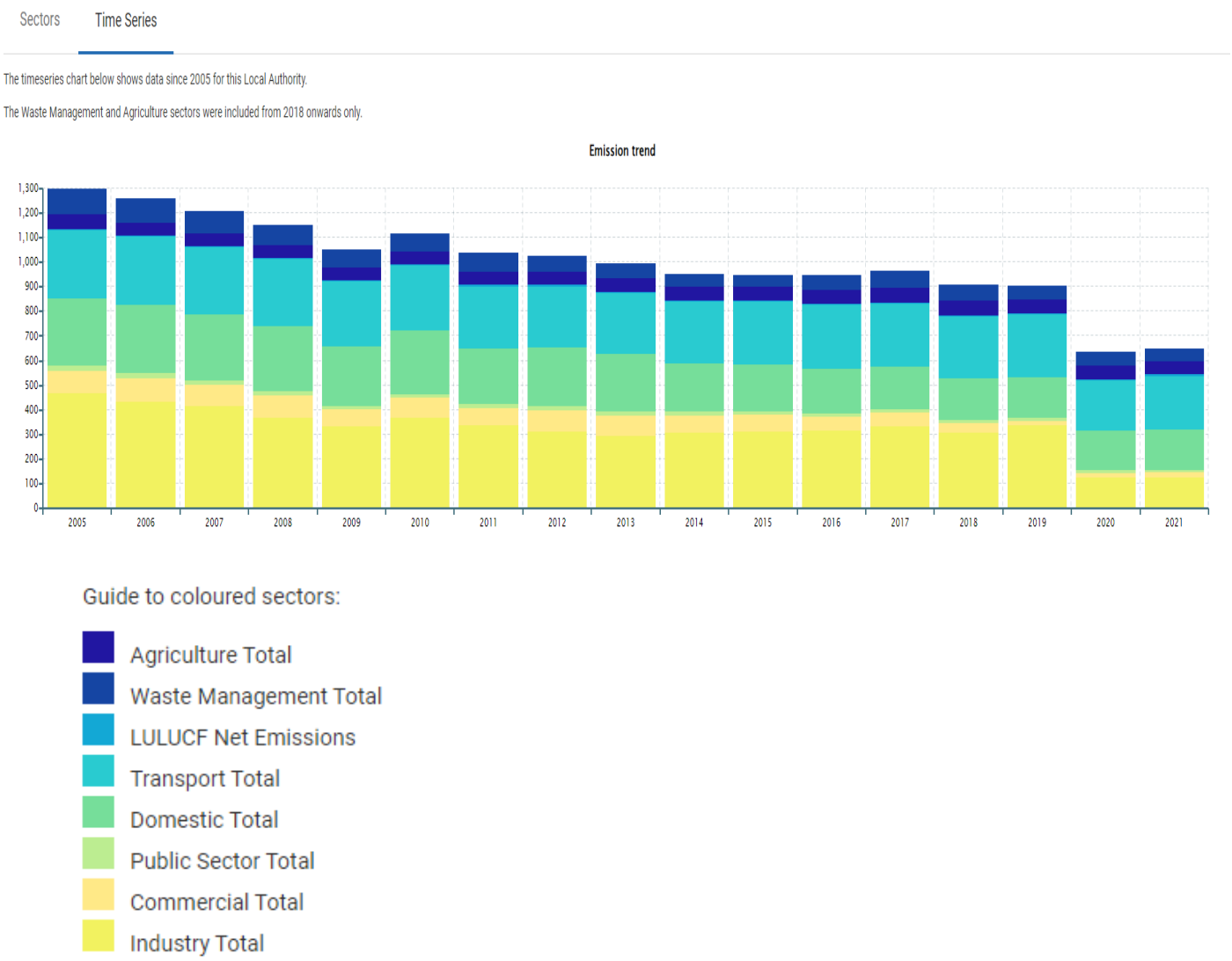
Data source - UK local authority and regional greenhouse gas emissions national statistics, 2005 to 2021 - GOV.UK (www.gov.uk)

In previous reports estimates of methane and nitrous oxide emissions for all sources prior to 2018 were not available. Estimates for all sources are now available going back to 2005. However, since the last annual Greenhouse Gas report was published, the Department for Energy, Security and Net Zero have issued a revision note, retrospectively amending some of the data for the Borough owing to an error 'identified in the compilation of these statistics:

a misallocation of emissions within the industry 'Other' category'. A full copy of this explanation can be found at [UK local authority and regional greenhouse gas emissions statistics, 2005 to 2021: revision note (publishing.service.gov.uk)](). The result is that historic emission figures for the Borough have been revised, with the revised data provided in Figure 3 above. This now shows a higher level of emissions for 2018 than previously reported (an increase of 177.4 $ktCO_2e$)

Figure 4, below, provides data from the National Atmospheric Emissions Inventory and illustrates how, for the same period, these emissions for the Borough can be broken down by sector.

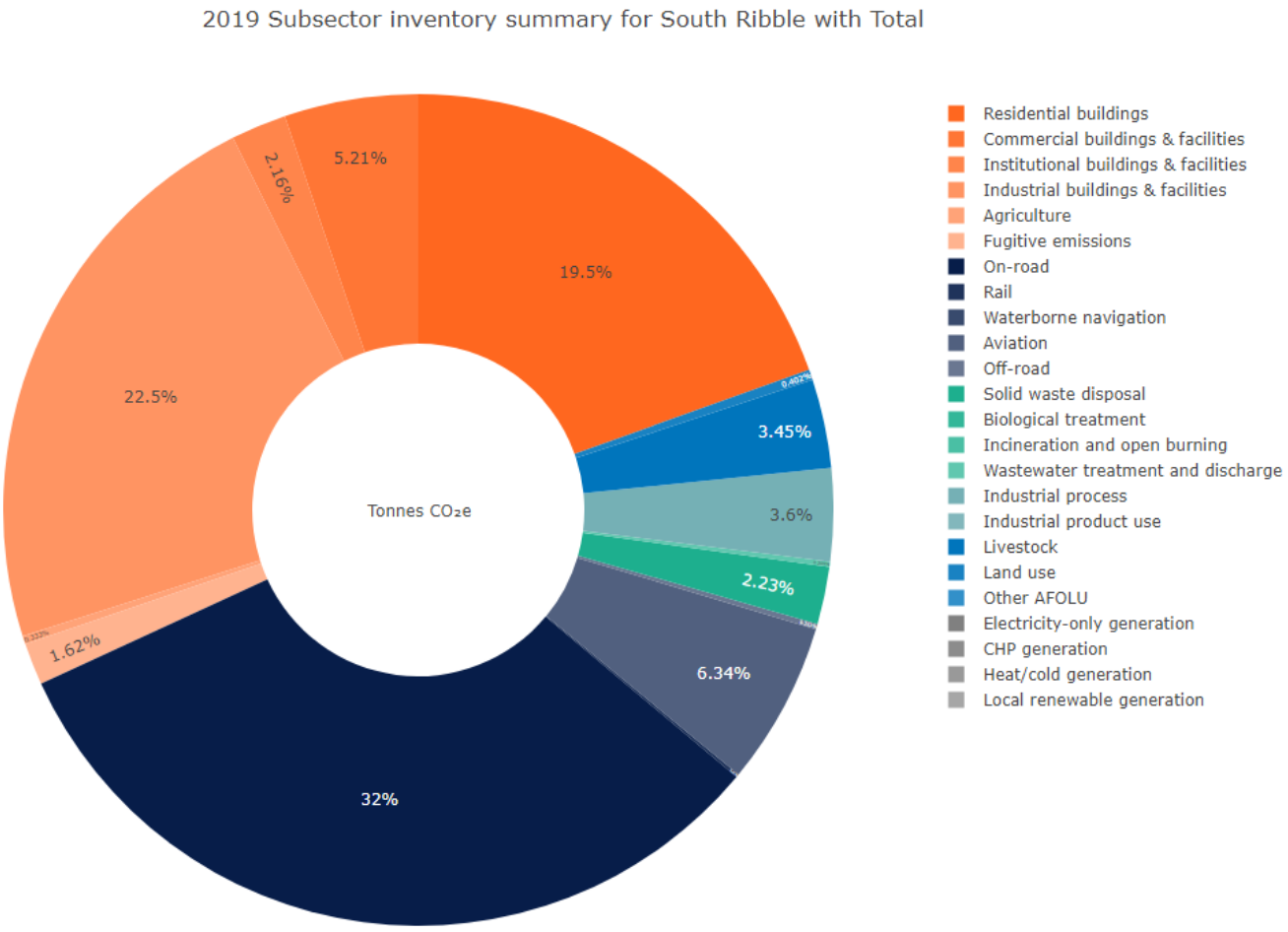
Figure 4, South Ribble Greenhouse Gas emissions estimates, from 2005 – 2021, by sector



Data source - [Local Authority GHG Map (beis.gov.uk)]()

Scatter, a local authority focused emissions measurement and modelling tool, provides a further breakdown as to those sectors contributing to Greenhouse Gas emissions within the Borough. The latest period they are able to supply this data for is 2019.

Figure 5, Greenhouse gas emissions inventory summary for the borough of South Ribble



Source – Scattercities, https://scattercities.com/data/inventory, from data relating to the most recent, 2019, reporting period

As reported in the Council's Climate Emergency Strategy 2022, Atkins have produced a report 'Lancashire Net Zero Pathways Options' on behalf of Lancashire County Council, Blackburn with Darwen Council, Blackpool Council and the Lancashire Economic Partnership (https://www.lancashire.gov.uk/media/933543/lancashire-net-zero-pathways-report.pdf). It provides an evidence-based assessment of Lancashire's current carbon footprint at a territorial level and generates a carbon reduction pathway that would put the region on track to achieve three targets as follows (against the national target of Net Zero by 2050):

- Net Zero emissions by 2030 (100% reduction relative to 1990 levels).
- 68% reduction of emissions by 2030 (relative to 1990 levels); and
- 78% reduction of emissions by 2035 (relative to 1990 levels).

As all Council's across Lancashire have stated their intention to be carbon net zero by 2030, the report examines those actions needed to meet this commitment.

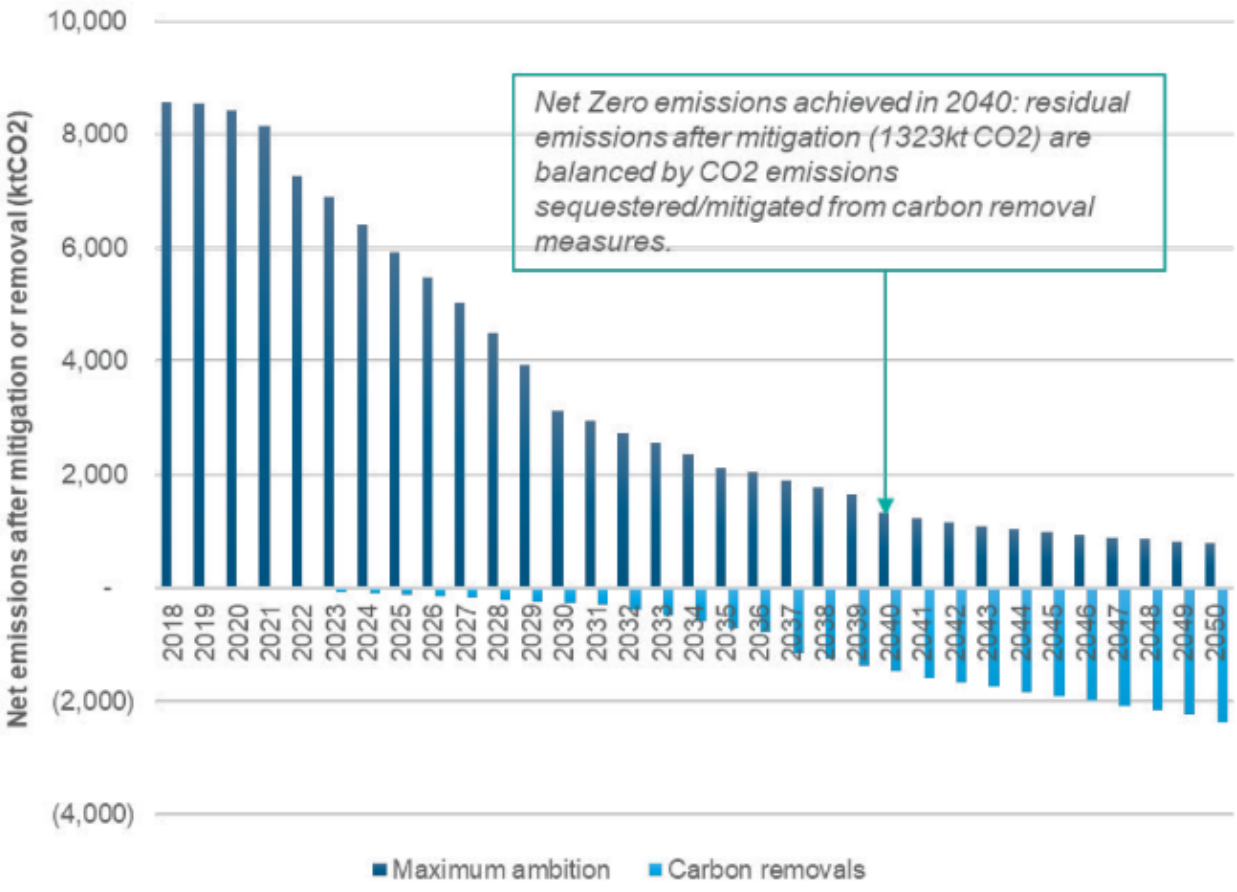
The report details those measures necessary across the County, including but not exclusively relating to –

- Transport – providing sustainable modes of transport, the infrastructure for clean transport and the need for behavioural change.
- Buildings – key improvement measures suggested include fabric improvements, LED lighting, decarbonisation of heating and renewable energy sources
- Industrial installations – including energy efficiency, fuel sources, and carbon capture and storage.

However, in considering potential future national and regional actions, the report warns that 'net zero emissions are unlikely to be possible any earlier than 2040.'

Figure 6 below, taken from the report, gives the projection to carbon neutrality in 2040, considering local sequestered / mitigation measures (including measures such as peatland restoration, woodland planting and carbon removal technologies)

Figure 6, Emissions inventory for the South Ribble Borough



The report also considers the wider benefits of pursuing net zero including enhancing business opportunities, employment opportunities, the overall health and wellbeing of residents, reduced energy costs, enhanced biodiversity and improved air quality.

Further information relating to borough wide emissions and actions can be found with the Council's Climate Emergency Strategy and Climate Emergency Action Plan at https://www.southribble.gov.uk/article/1254/Climate-Change-Emergency

6. Conclusion

The annual emissions for the Council's own estate and operations, for the year April 2023 – March 2024 was 2,504,156 kgCO2e down on the previous reporting period.

As the Council progresses with works to decarbonise its estate and operations and move to green energy tariffs it is anticipated that emissions will decrease within the coming years, affirming the Council's ambition to be carbon net zero by 2030.

In respect to the borough, emissions are identified as reducing, with an approximate 649.2Kt reduction since 2005. However, the borough still has an emission rate of 647.8 Kt in 2021 (latest data available) indicating a significant way to go to achieve the Council's goal of net carbon-zero by 2030.

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Glossary

Carbon neutral – having no net release of carbon dioxide into the environment.

Carbon offsetting – practices to neutralise remaining emissions that cannot be removed entirely.

CO_2e - the universal unit of measurement to indicate the global warming potential (GWP) of GHGs, expressed in terms of the GWP of one unit of CO_2.

Cubic metre (m^3) – volume made by a cube that is 1 metre on each side. It is equivalent to 1000 litres or 220 gallons.

GHG – greenhouse gases - There are seven main GHGs that contribute to climate change, as covered by the Kyoto Protocol: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3).

GWP – Global warming potential – relative potency of a greenhouse gas, taking into account how long it remains active in the environment.

Solar PV – Solar Photovoltaic

Kilowatt (kW) – a measure of power, a universal standard for measuring gas and electricity.

Kilowatt Hour (kWh)