

Sunderland City Council

Low Carbon – Annual Data Report 2021/22

November 2022

LOW CARBON – ANNUAL DATA REPORT

APRIL 2021 TO MARCH 2022

0. Executive Summary

- 0.1 Sunderland City Council declared a climate emergency in 2019. This declaration committed Sunderland to reduce its citywide emissions and help global temperature rise stay well below 2.0°C, pursuing 1.5°C by 2050, in-line with the Paris Agreement of 2015.
- 0.2 In 2020/21 Sunderland's 2030 Shadow Board prepared the Low Carbon Framework which set out the approach for Sunderland to achieve citywide carbon neutrality by 2040. This was adopted by the partnership in December 2020. The Council endorsed the Low Carbon Framework in January 2021 and at the same time adopted its initial Low Carbon Action Plan, which asset out the target for the Council to become carbon neutral by 2030. The initial Low Carbon Action Plan was reviewed and the Council's updated Action Plan was approved by Cabinet in July 2022. The Low Carbon Framework and City Council Action Plan are published on the MySunderland website.
- 0.3 This annual carbon emissions report is the Council's second annual report since the citywide Low Carbon Framework was endorsed and the Council's initial Low Carbon Action Plan was adopted. It covers the Council's emissions and Sunderland's citywide emissions in turn. It provides an estimation for the annual greenhouse gas (GHG) emissions for Sunderland City Council in the 2021/22 financial year (as well as updates to previously published data where appropriate for accuracy purposes), as well as citywide carbon emissions for Sunderland in the 2020 calendar year (the latest year for which city-wide data is currently available).
- 0.4 The report sets out that the Council's scope 1 and 2 carbon footprint during 2021/22 was 7,498 tonnes of Carbon Dioxide equivalent (7,946tCO_{2e}.) representing a 12.4% reduction from the previous year and a 58.5% reduction since 2017/18. The definition of Scope 1, 2 and 3 emissions is set out in Section 4 of this report. The main source of emissions from Council operations in 2021/22 was the generation of purchased electricity for operational buildings. The generation of purchased electricity for streetlighting and gas consumption in buildings experienced the greatest reduction of emissions, with annual reductions of 16.3% and 19.1% respectively. The vehicle fleet experienced the lowest reduction, with emissions falling by 0.3%. It is important to note that data from the 2021/22 financial year is still impacted by the COVID-19 pandemic.
- 0.5 The Council continues to refine its scope 3 emission data, building on the annual data report for 2020/21. Based on current data availability, the Council's scope 3 emissions for the 2021/22 financial year are estimated to be

37,083.10tCO₂e (82% of overall emissions). The main sources of scope 3 emissions for the Council are purchased goods and services as well as energy consumption within scope 3 buildings (e.g., schools, and Sunderland Care and Support, fire stations and leisure premises). Work is ongoing in relation to the Council's scope 3 emissions inventory and datasets.

- 0.6 On a citywide level in 2020 (the latest year for which data is available) a net 1,039,057.32tCO₂ were emitted in Sunderland, representing an 11.5% decrease from 2019 levels. Against the science-based interim target set by the Tyndall Centre for the period 2015-2020, city-wide emissions were reduced by 26.1%, which exceeded the target for a 16.1% reduction over this period. The net 1,039,057.32tCO₂ emissions for 2020 consists of 1,046,556.63tCO₂ emitted from the domestic, industrial, commercial, public, transport and agriculture sectors (a decrease of 11.5% since 2019 and 26.1% since 2015) with 7,499.31 tonnes of Carbon sequestered by the Land Use, Land Use Change and Forestry (LULUCF) sector (a decrease in carbon sequestration levels of 4.6% since 2019 and 8.3% since 2015 – primarily due to an increase in emissions from cropland within the agriculture sector).
- 0.7 The main causes of city-wide CO₂ emissions in Sunderland in 2020 were domestic energy (emitting 391,502 tonnes CO₂, mainly due to domestic gas) and transport (emitting 340,188 tonnes CO₂, mainly due to roads). Sunderland has met its recommended interim target suggested by the Tyndall Centre for 2015-2020 of a 16.1% reduction in annual citywide emissions, which is aligned with the city's overall carbon budget, achieving a reduction of 26.1%. Continued focus on reducing emissions across the city will however be essential each year if the interim targets recommended by the Tyndall Centre are to be achieved going forward, including the proposed 14.4% annual reduction targeted from 2020 onwards. Emissions from the transport and industrial sectors experienced the greatest decrease from the previous year, with reductions of 76,106tCO₂ (18%) and 47,717tCO₂ (17%) respectively. It is important to note that data for 2020 city-wide emissions is impacted by the COVID-19 pandemic.
- 0.8 This report also provides a summary of key activity and progress in each of the strategic priority areas within the city's Low Carbon Framework, which are taken forward into the Council's Low Carbon Action Plan. An increased understanding of Council and city-wide emissions data informed a review of the Low Carbon Action Plan, which was updated in July 2022, and will increasingly inform decision making and targeting of delivery in relation to the ambitious Council and City targets for decarbonisation to maximise the reduction in emissions and the rate at which these can be achieved.

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1. Introduction

1.0.1. This report provides an overview of the Council's carbon footprint for the 2021/22 financial year as well as the citywide carbon footprint for Sunderland as of 31 December 2020 (the most recent year for which data is available). In addition, this report provides an overview of key work undertaken by the Council during the last year to support delivery against the Council's and City's carbon reduction targets

1.0.2. Based on the citywide Low Carbon Framework partners have adopted, we aim for Sunderland to be a carbon neutral city by 2040. Through its Low Carbon Action Plan, the Council aims to be carbon neutral as an organisation across scope 1 and 2 emissions by 2030.

1.0.3. Section 1 of this report summarises the emissions data for the Council and then for Sunderland as a city. This data is set out and analysed more fully in Sections 4 and 5 respectively. Section 2 briefly sets out the global context, including the Paris Agreement. Section 3 covers Sunderland's wider reporting mechanisms, in addition to this annual report, including the establishment of quarterly reporting and an annual submission to CDP (formerly Carbon Disclosure Project). The report then moves to focus in more detail on the City Council's annual carbon emissions followed by those for the city as a whole. Section 4 defines the Council's current organisational boundary and provides an overview of the Council's scope 1, 2 and 3 footprint for each financial year since 2017/18 (which is used as the baseline for reporting), before going into further depth for each key source of emissions in turn. Section 5 provides a brief overview of city-wide emissions, before breaking this down into the main sources of emissions within each sector and comparing this to the regional and national averages. Section 6 summarises key low carbon activity progressed during the year 2021/22. Finally, section 7 provides a conclusion and summarises the key findings from the report.

1.1. Sunderland City Council – Overview of emissions

1.1.1. The Council's scope 1 and 2 carbon footprint during 2021/22 was 7,497.52tCO₂e, representing a 12.4% reduction from 2020/21. Approximately 20% of this reduction was due to the decarbonisation of the National Grid, with the remainder due to lower energy consumption. The main source of emissions from Council operations in 2021/22 was the generation of purchased electricity for Council buildings. The Council's greenhouse gas emissions continued to be impacted by the COVID-19 pandemic during this period.

1.1.2. The Council is also continuing to develop its scope 3 datasets, in line with the recommendations of the Greenhouse Gas Protocol. Based on the current data available, scope 3 emissions for the Council are estimated to have accounted for 37,803.09tCO₂e in 2021/22 (82% of the Council's overall

emissions). Focus on scope 3 emission sources (our indirect emissions) will continue and increase as we move forward, to bring our value chain with us on our Low Carbon journey and achieve an increasingly robust monitoring process.

- 1.1.3. Sunderland City Council's full greenhouse gas inventory is set out in Table 1. This includes the trend in relation to the previous year (2020/21) and the base year (2017/18 or the year in which a data set was first collected). To note, the Council's emissions in 2020/21 were significantly impacted by Covid-19.

Scope	Source	Annual Emissions (tCO ₂ e) ¹					Trend from previous year	Trend from Baseyear ²
		2017/18	2018/19	2019/20	2020/21	2021/22		
Scope 1	Gas Consumption (buildings)	2,092.03	2,299.56	2,408.74	2,399.79	1,942.44	↓ 19.1%	↓ 7.2%
	Vehicle fleet	1,463.57	1,428.38	1,393.05	1,419.96	1,415.53	↓ 0.3%	↓ 3.3%
	Total Scope 1	3,555.6	3,727.94	3,801.79	3,819.75	3,357.97	↓ 12.1%	↓ 5.6%
Scope 2	Purchased electricity generation (buildings)	4,974.82	3,773.52	3,060.19	2,335.85	2,125.40	↓ 9.0%	↓ 57.3%
	Purchased electricity generation (streetlighting)	9,526.37	4,907.04	3,025.12	2,407.18	2,014.15	↓ 16.3%	↓ 78.9%
	Total Scope 2	14,501.19	8,680.56	6,085.31	4,743.03	4,139.55	↓ 12.7%	↓ 71.5%
Scope 3	Electricity Transmission & Distribution	1,355.83	739.97	516.63	407.90	366.33	↓ 10.2%	↓ 73.0%
	Water Supply & Treatment	36.66	37.61	60.32	43.29	20.96	↓ 51.6%	↓ 42.8%
	SCAS Fleet	197.88	197.92	187.08	174.03	163.82	↓ 5.9%	↓ 17.2%
	Gas Consumption (buildings outside of financial control)	8,525.83	7,270.80	7,461.58	6,800.63	6,628.87	↓ 2.5%	↓ 22.2%
	Electricity Generation (buildings outside of financial control)	7,145.82	5,414.81	4,180.45	3,236.88	3,210.83	↓ 0.8%	↓ 55.1%
	Business Travel	NE	337.15	246.70	106.27	166.91	↑ 57.1%	↓ 50.5%
	Commuting	NE	2,166.71	2,293.59	NE ³	671.09	↑ NA	↓ 69.0%
	Home Working	NE	NE	63.84	2,039.96	1,410.14	↓ 30.9%	↑ 2,108.9%

¹ Some data has changed slightly since the previous annual report due to a change in reporting methodology.

² Where data from 2017/18 is not available, the base year will be the first year data is available.

³ (Not estimated) – the vast majority of staff were working from home so it has not been possible to calculate a figure. However, since only critical workers were commuting this figure is expected to be very low.

	Purchased goods and services	NE	NE	NE	NE	25,164.14	→ NA	→ NA
	Total Scope 3	/	/	/	/	37,803.09	→ NA	→ NA
Total Scope 1 & 2		18,056.79	12,408.50	9,887.1	8,562.78	7,497.52	▮ 12.4%	▮ 58.5%
Total Scope 1, 2 & 3		/	/	/	/	45,300.61	→ NA	→ NA

Table 1 - Sunderland City Council's Greenhouse Gas Emissions Inventory

1.2. City of Sunderland – Overview of emissions

1.2.1. The Tyndall Centre has provided science-based recommendations for Sunderland to contribute a 'fair share' of the Paris Agreement 2015, advising an interim target of a 16.1% reduction in annual citywide carbon emissions for the period 2015-2020, followed by an annual reduction of 14.4% from 2020 onwards. This will allow Sunderland to stay within the citywide carbon budget of 8.2 million tonnes for the period 2020-2100, which is aligned with the goals from the Paris Agreement.

1.2.2. In 2020, Sunderland as a whole emitted a net 1,039,057.32tCO₂, representing an 11.5% decrease from 2019 levels. Against the science-based interim target set by the Tyndall Centre, city-wide emissions were reduced by 26.1% over the period from 2015-2020, which exceeded the target for a 16.1% reduction over this period. The net 1,039,057.32tCO₂ consists of 1,046,556.63tCO₂ emitted from the domestic, industrial, commercial, public, transport and agriculture sectors (decrease of 11.5% since 2019 and 26.1% since 2015) 7,499.31 tonnes of Carbon sequestered by the Land Use, Land Use Change and Forestry (LULUCF) sector (a decrease of 4.6% since 2019 and 8.3% since 2015). Sunderland has met the initial target of a 16.1% reduction in citywide emissions from 2015 levels by 2020. However, it is acknowledged that decarbonisation will have to significantly accelerate beyond 2020 to meet the more ambitious longer-term target of a 14.4% annual reduction moving forward, as reflected by figure 1.

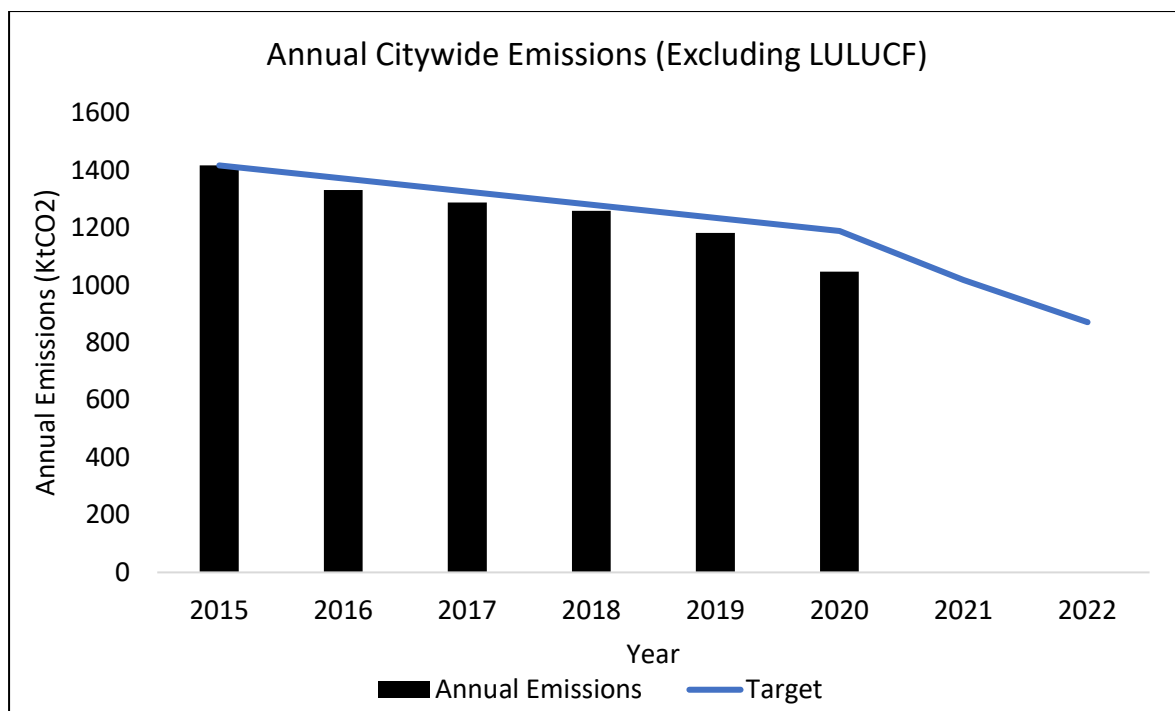


Figure 1 - Sunderland annual citywide emissions, 2015-2020 (BEIS, 2022)

Figure 2 shows the main causes of CO₂ emissions in Sunderland in 2020. During 2020 domestic energy overtook transport as the main source of CO₂ emissions in Sunderland. This was largely linked to the COVID-19 pandemic, with less people travelling for business and leisure and more people spending larger amounts of time at home. It is expected that in the next couple of years, transport emissions will increase again as people return to their normal lives and/or establish new patterns.

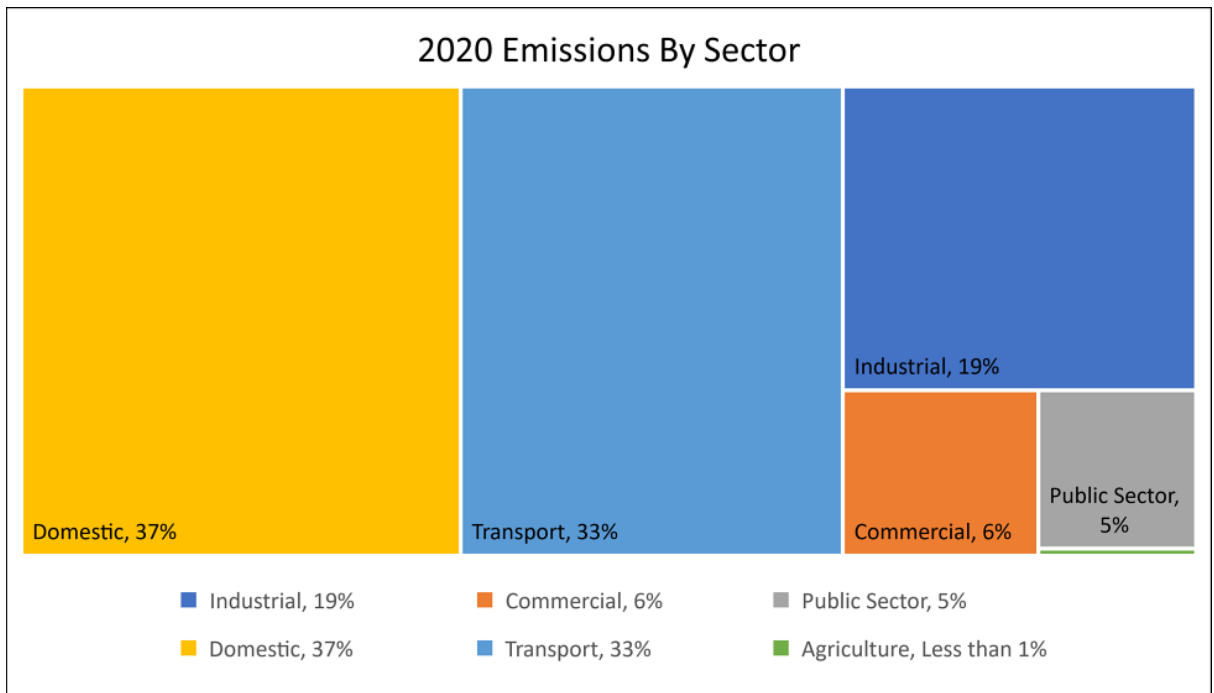


Figure 2 - 2020 citywide emissions by Sector (BEIS, 2022)

2. Global Context

2.1. The Climate Emergency and the Paris Agreement

2.1.1. Sunderland City Council declared a climate emergency in 2019. This declaration committed Sunderland to reduce its citywide emissions and help global temperature rise stay well below 2.0°C, pursuing 1.5°C by 2050, in-line with the Paris Agreement of 2015.

2.1.2. To understand what the Paris Agreement means for UK local authorities, science-based research was completed by the Tyndall Centre to calculate carbon budgets for each authority, which fit in line with the goals of the Paris Agreement. Through using the latest scientific consensus, the Tyndall Centre recommended that Sunderland:

- a) stays within a maximum carbon budget of 8.2 million tonnes for the period 2020-2100.
- b) initiates an immediate programme of CO₂ mitigation to deliver cuts in emissions averaging a minimum of -14.4% per year from 2020, to deliver a Paris-aligned carbon budget;
- c) reaches zero or near zero carbon emissions by no later than 2040.

2.1.3. Figure 3 shows the advised carbon emissions reduction pathway for Sunderland, recommending a rapid reduction in annual citywide carbon emissions, particularly within the next decade. It was advised that by 2020, Sunderland should aim for a 16.1% reduction in CO₂ emissions, relative to 2015 levels. After 2020, it was advised by the Tyndall Centre that citywide carbon emissions should then reduce by 14.4% annually.

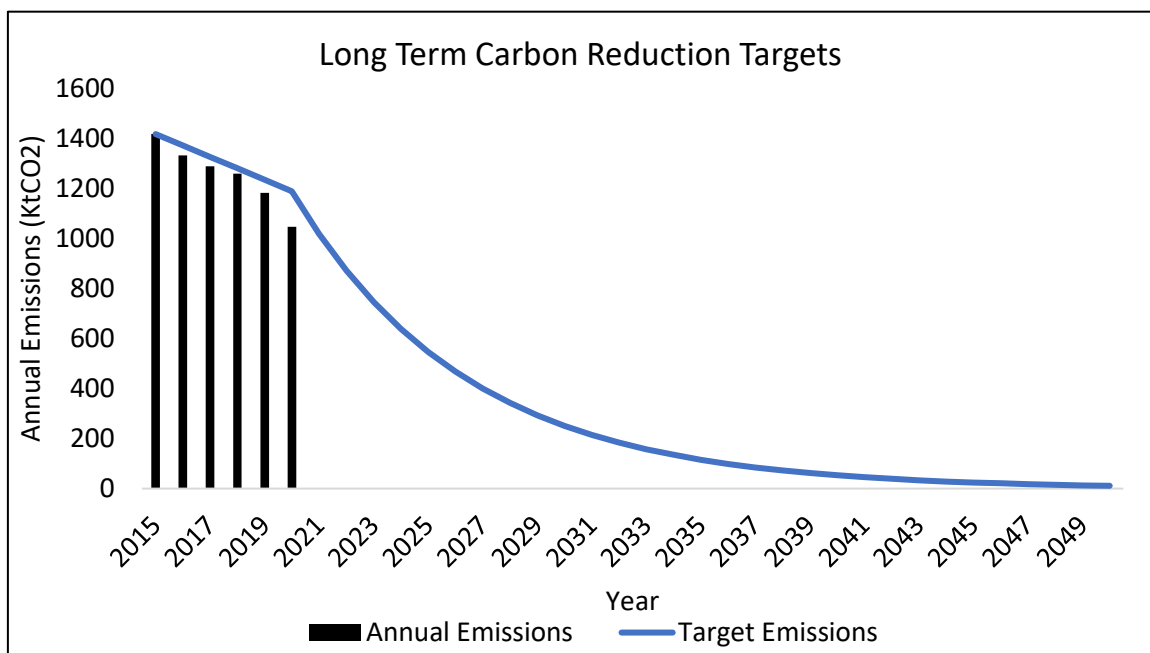


Figure 3 - Long term carbon reduction targets aligned with the carbon budget recommended by the Tyndall Centre (Tyndall Centre, 2022)

2.1.4. The Tyndall Centre report recommends that Sunderland stays within a recommended carbon budget of 8.2 million tonnes for the period 2020-2100 and, due to the data available at the time the report was published, 10.9 million tonnes for the period 2018-2100. The report informed the 2040 carbon neutrality target for the city. The Tyndall Centre also provides indicative recommended shorter-term carbon budgets and associated emissions reduction targets by a series of set dates to guide progress towards meeting the goals of Sunderland's long term carbon budget. These recommendations are displayed in tables 2 and 3. It is important to note that this carbon budget for the city does not include aviation and shipping, as they remain a part of the national carbon budget. The Land Use, Land Use Change and Forestry (LULUCF) sector, and wider greenhouse gas emissions are also considered separately from this budget.

Carbon Budget Period	Recommended Carbon Budget (Mt CO₂)
2018 – 2022	5.8
2023 – 2027	2.8
2028 – 2032	1.3
2033 – 2037	0.6
2038 – 2042	0.3
2043 – 2047	0.1
2048 – 2100	0.1

Table 2- Interim Carbon Budget recommendations for Sunderland (Tyndall Centre, 2022)

Year	Cumulative Reduction in Annual Emissions
2020	16.1%
2025	61.5%
2030	82.4%
2035	91.9%
2040	96.3%
2045	98.3%
2050	99.2%

Table 3 - Interim 5-yearly annual emission reduction targets from a 2015 baseline recommended for Sunderland (Tyndall Centre, 2022)

2.2. Low Carbon Framework – a city-wide strategic approach

2.2.1. In 2020/21 Sunderland's 2030 Shadow Board prepared the Low Carbon Framework which set out the city-wide strategic approach for Sunderland to achieve citywide carbon neutrality by 2040. This was adopted by the Sunderland Partnership in December 2020. The Council endorsed the Low Carbon Framework in January 2021 and at the same time adopted its initial Low Carbon Action Plan, which set out the target for the Council to become carbon neutral by 2030. The Council has also recently reviewed and updated its Low Carbon Action Plan, which was approved by Cabinet in July 2022,

drawing on the increased knowledge and understanding of the Council's emissions which has been developed.

- 2.2.2. Sunderland's Low Carbon Framework sets out 7 strategic priorities, which are reflected in the City Council's Low Carbon Action Plan. These strategic priorities are: Our Behaviour; Our Policies and Operational Practices; An Energy Efficient Built Environment; Renewable Energy Generation and Storage; Low Carbon and Active Transport; A Green Economy; and Consumption and Waste.
- 2.2.3. In addition to the above, Sunderland City Council reaffirmed its commitments to UK100, by signing the renewed Net Zero pledge, in January 2022 with the support of partners across the 2030 Shadow Board. Signatories of this pledge are working collaboratively to ensure net-zero targets are reached as soon as possible. The commitment to UK100 raises Sunderland City Council's and citywide ambitions, to achieve net-zero greenhouse gas emissions by 2030 and 2045 respectively.
- 2.2.4. This report is the second annual report since the citywide Low Carbon Framework was endorsed and the Council's Low Carbon Action Plan was adopted. The report builds on the [2020/21 Annual Carbon Report which is published on the MySunderland website.](#)

3. Additional Reporting

3.1. Quarterly Reporting

- 3.1.1. In addition to producing an annual report, partners of the 2030 Shadow Board are committed to establishing quarterly reporting for scope 1 and 2 emissions. The Council's most recent quarterly reports can be found on the [MySunderland website](#).

3.2. CDP

- 3.2.1. In addition to this annual report, Sunderland City Council recently completed its second annual disclosure to CDP (formerly Carbon Disclosure Project) in July 2022. CDP is now widely viewed as the gold standard for environmental reporting, and disclosure allowed the city to report the same information as 1,000 other cities around the world.
- 3.2.2. CDP provides in-depth feedback to cities on the quality of their disclosure, their low carbon ambitions and targets, and the actions they are taking both to mitigate and adapt to climate change providing useful insight into city-wide strengths and challenges. CDP also provide cities with an overall grade from D-A, with D being 'disclosure', C being 'awareness', B being 'management' and A being 'leadership'.
- 3.2.3. Feedback from the city's submissions to CDP will continue to inform future activity by the Council and its partners as appropriate and help to ensure continued focus on reducing emissions as quickly as possible.
- 3.2.4. The 2022 CDP disclosure builds upon the Council's first disclosure to CDP in July 2021. Following that submission, in November 2021, it was announced that Sunderland received a grade A for its first submission and was recognised as a global leader in the fight against climate change. Sunderland was one of 11 cities in the UK, and 1 one of 95 cities globally, to receive this recognition.

4. Sunderland City Council - Carbon footprint

4.1. Background

4.1.1. In-line with the GHG Protocol Corporate Standard, Sunderland City Council's GHG emissions are categorised into three scopes:

- Scope 1 emissions refer to direct emissions from owned or controlled sources, for example the combustion of fuel;
- Scope 2 emissions include emission from the generation of purchased energy, for example electricity purchased from the National Grid; and
- Scope 3 emissions refer to all indirect emissions which occur in the value chain of a reporting company, for example employee commuting and emissions from purchased goods.

4.1.2. When determining the Council's organisational boundary, the 'financial control' approach is taken, whereby assets which are not under the Council's direct financial control (for example, school buildings) are classified as scope 3. This reflects the fact that the Council has limited direct influence on reducing these emissions.

4.1.3. The Council's scope 1 and 2 emissions currently consist of:

- Gas consumption in buildings within the Council's financial control (City Council, Together for Children)
- Vehicle fleet (Council, Together for Children)
- Generation of purchased electricity for streetlighting in the city
- Generation of purchased electricity in buildings within the Council's financial control (City Council, Together for Children)

4.1.4. The Council currently reports on the following sources of scope 3 emissions:

- Water supply and treatment
- Electricity transmission and distribution
- Emissions from business travel (including air, rail, grey fleet and hotels)
- Vehicle fleet - Sunderland Care and Support (SCAS)
- Gas consumption in buildings for which are on the Council's property portfolio, but not in its direct financial control (e.g., school buildings, fire stations, SCAS buildings, leisure)
- Electricity generation for buildings which are on the Council's property portfolio, but not in its direct financial control (e.g., school buildings, fire stations, SCAS buildings, leisure)
- Council employee commuting / working from home emissions
- Purchased goods and services

4.1.5. There are several likely sources of emissions currently excluded from our emissions inventory. Fugitive emissions (for example, from refrigerant gases, air conditioning and heat pumps) are currently excluded from scope 1 due to a lack of data. This may be considered in the future, although it is anticipated that emissions from this source will have a minimal impact on the Council's overall footprint. The Council is aiming to continually develop its carbon emissions inventory, to be able to provide a more complete picture of our performance each year. Where this results in amendments to figures reported in previous years (increases or decreases), these will be captured and records updated for accuracy and transparency.

4.2. City Council - Greenhouse Gas Emissions Inventory

4.2.1. Table 3 sets out Sunderland City Council's greenhouse gas emissions across each of the areas on which data is currently reported. Historically, it shows that scope 1 emissions have generally been fluctuating (with 2021/22 levels finishing below 2017/18 levels) while scope 2 emissions have been consistently declining (in part as a result of the ongoing decarbonisation of the National Grid). The Council is continuing to develop its scope 3 data inventory and monitoring.

Scope	Source	Annual Emissions (tCO ₂ e) ⁴					Trend from previous year	Trend from Baseyear ⁵
		2017/18	2018/19	2019/20	2020/21	2021/22		
Scope 1	Gas Consumption (buildings)	2,092.03	2,299.56	2,408.74	2,399.79	1,942.44	↓ 19.1%	↓ 7.2%
	Vehicle fleet	1,463.57	1,428.38	1,393.05	1,419.96	1,415.53	↓ 0.3%	↓ 3.3%
	Total Scope 1	3,555.6	3,727.94	3,801.79	3,819.75	3,357.97	↓ 12.1%	↓ 5.6%
Scope 2	Purchased electricity generation (buildings)	4,974.82	3,773.52	3,060.19	2,335.85	2,125.40	↓ 9.0%	↓ 57.3%
	Purchased electricity generation (streetlighting)	9,526.37	4,907.04	3,025.12	2,407.18	2,014.15	↓ 16.3%	↓ 78.9%
	Total Scope 2	14,501.19	8,680.56	6,085.31	4,743.03	4,139.55	↓ 12.7%	↓ 71.5%
Scope 3	Electricity Transmission & Distribution	1,355.83	739.97	516.63	407.90	366.33	↓ 10.2%	↓ 73.0%

⁴ Some data has changed slightly since the previous annual report due to a change in reporting methodology.

⁵ Where data from 2017/18 is not available, the base year will be the first year data is available.

	Water Supply & Treatment	36.66	37.61	60.32	43.29	20.96	↘ 51.6%	↘ 42.8%
	SCAS Fleet	197.88	197.92	187.08	174.03	163.82	↘ 5.9%	↘ 17.2%
	Gas Consumption (buildings outside of financial control)	8,525.83	7,270.80	7,461.58	6,800.63	6,628.87	↘ 2.5%	↘ 22.2%
	Electricity Generation (buildings outside of financial control)	7,145.82	5,414.81	4,180.45	3,236.88	3,210.83	↘ 0.8%	↘ 55.1%
	Business Travel	NE	337.15	246.70	106.27	166.91	↗ 57.1%	↘ 50.5%
	Commuting	NE	2,166.71	2,293.59	NE ⁶	671.09	↗ NA	↘ 69.0%
	Home Working	NE	NE	63.84	2,039.96	1,410.14	↘ 30.9%	↗ 2,108.9%
	Purchased goods and services	NE	NE	NE	NE	25,164.14	→ NA	→ NA
	Total Scope 3	/	/	/	/	37,803.09	→ NA	→ NA
	Total Scope 1 & 2	18,056.79	12,408.50	9,887.1	8,562.78	7,497.52	↘ 12.4%	↘ 58.5%
	Total Scope 1, 2 & 3	/	/	/	/	45,300.61	→ NA	→ NA

Table 4 - Sunderland City Council's Greenhouse Gas Emissions Inventory

4.2. Scope 1 and 2 Emissions

4.2.2. Figure 4 shows the trend for the Council's scope 1 and 2 emissions over the last five years. Figure 5 then shows scope 1 emissions only and Figure 6 shows scope 2 emissions only.

⁶ (Not estimated) – the vast majority of staff were working from home so it has not been possible to calculate a figure. However, since only critical workers were commuting this figure is expected to be very low.

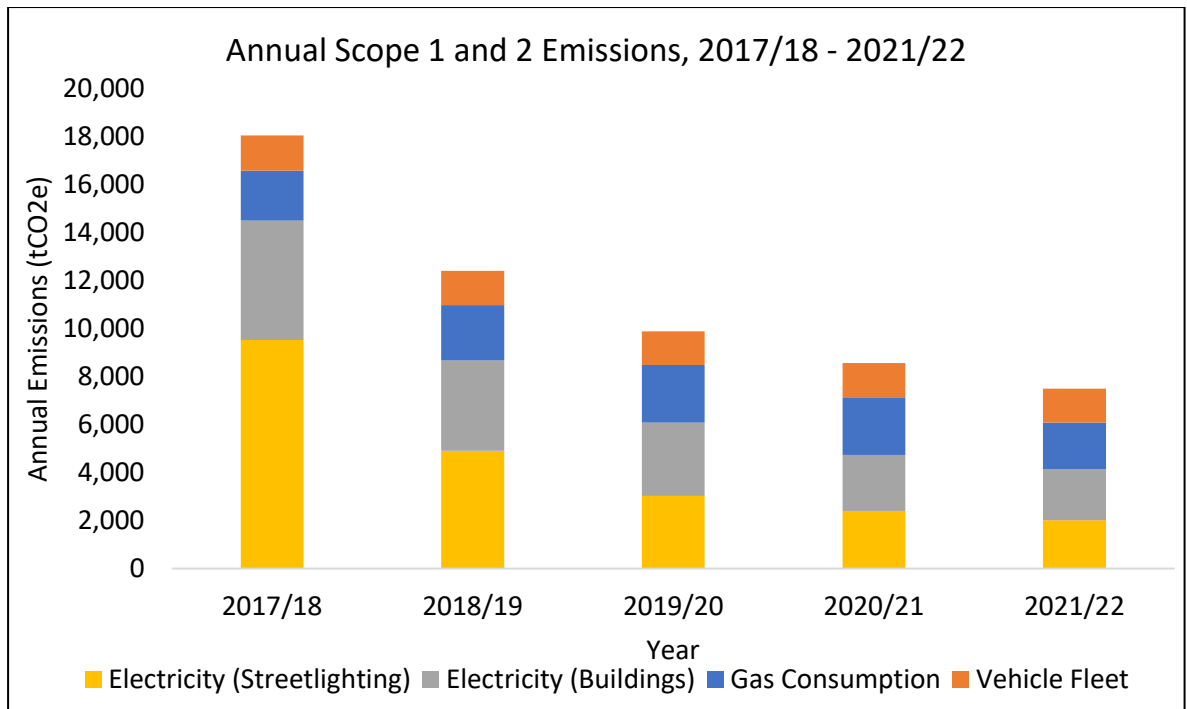


Figure 4 – Annual Council scope 1 and 2 emissions, 2017/18 - 2021/22

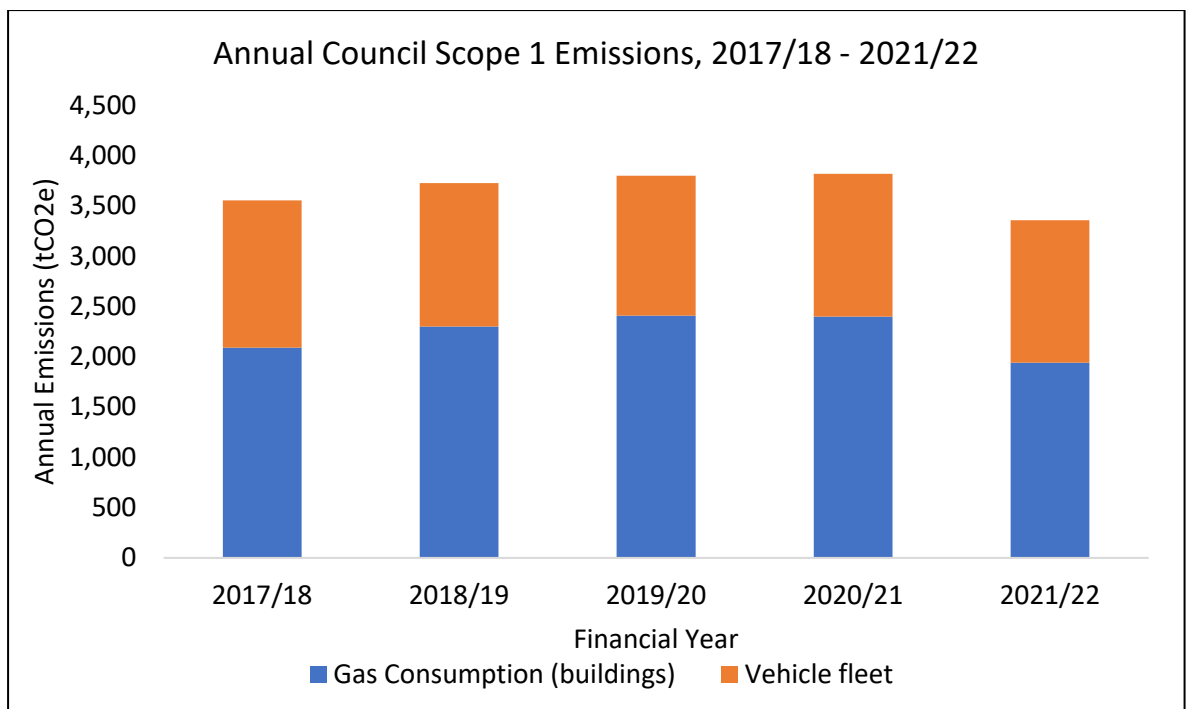


Figure 5 - Annual Council scope 1 emissions, 2017/18 - 2021/22

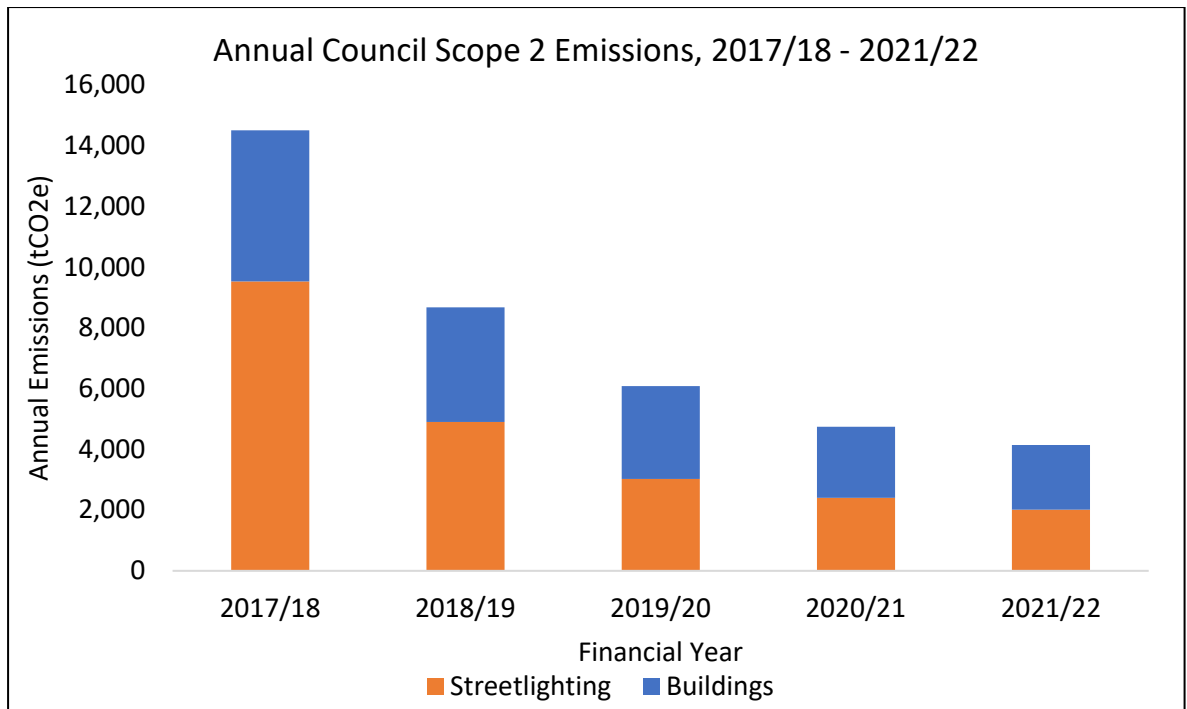


Figure 6 - Annual Council Scope 2 Emissions, 2017/18 - 2021/22

4.2.3. As set out in the overview at Section 1, annual scope 1 and 2 emissions have reduced by 1,065tCO₂e (12.4%) from 2020/21 to 2021/22. Of this 1,065tCO₂e, 413tCO₂e was due to the decarbonisation of the National Grid (39%). The remaining 61% of reduction was due to reduced energy usage in gas (primarily due to the closure of the Civic Centre), electricity and the vehicle fleet. Although many restrictions were lifted during the 2021/22 period, COVID-19 still heavily influenced the Council's CO₂e emissions with staff continuing to adopt a hybrid working approach and the new City Hall opening in the second half of the financial year. Up to the year 2020/21, as evidenced in figures 4 and 5, scope 1 emissions were increasing overall and scope 2 emissions were decreasing at a fast pace. 2021/22 is the first year since the 2017/18 baseline where all sources of scope 1 and 2 CO₂e emissions have reduced.

4.2.4. The main sources of scope 1 and 2 emissions from Council operations in 2021/22 were the generation of purchased electricity for council buildings and citywide streetlighting, emitting 2,125tCO₂e and 2,114tCO₂e respectively.

4.2.5. The largest reduction in emissions from Council operations was gas consumption, largely due to the closure of the Civic Centre. Gas consumption currently accounts for 26% of Council scope 1 and 2 emissions and Bishopwearmouth Crematorium is now the largest consumer of gas across the Council's estate as shown in Figure 7. A small proportion of the Council's buildings account for a significant proportion of its gas consumption, with the top 10 sites emitting 88% of the Council's gas emissions in 2021/22.

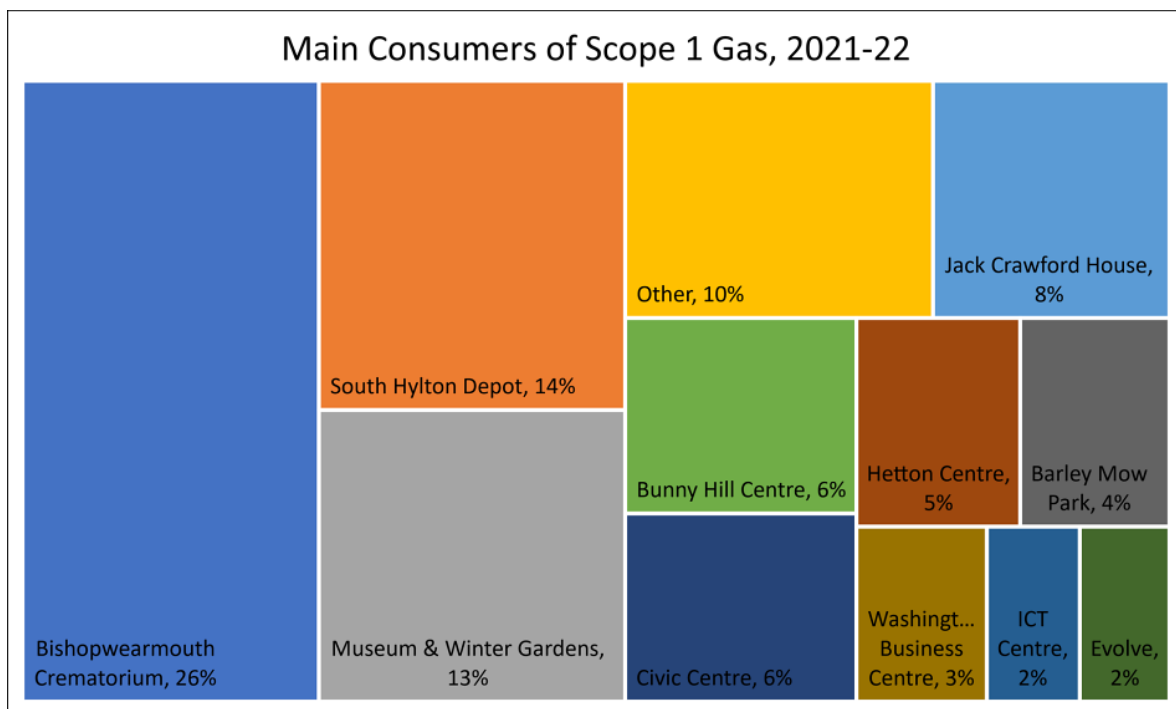


Figure 7 - Main consumers of scope 1 gas, 2021-22

4.2.6. Of all Council scope 1 and 2 emissions sources, emissions from the vehicle fleet reduced the least during 2021/22, reducing by just 0.3%. This reduction is similar to previous trends, as emissions from the Council's vehicle fleet have experienced a small overall reduction since 2017/18. The vehicle fleet currently accounts for 19% of Council scope 1 and 2 emissions and, as evidenced in figure 8, most emissions come from diesel HGVs which is a hard-to-treat emission source. The challenge of decarbonising fleet is recognised in the City Council's Action Plan. It is proposed to review wider EV strategy work to ensure fleet is appropriately considered, and to embed electrification and decarbonisation into lifecycle replacement planning within the context of current technology strengths. It should be noted that emissions from electric vehicles within the Council's fleet are currently recorded elsewhere within purchased electricity emissions. As the Council continues to improve data monitoring processes and more electric vehicles are purchased, it is hoped that a figure for electric vehicles can be included separately in reporting in future years.

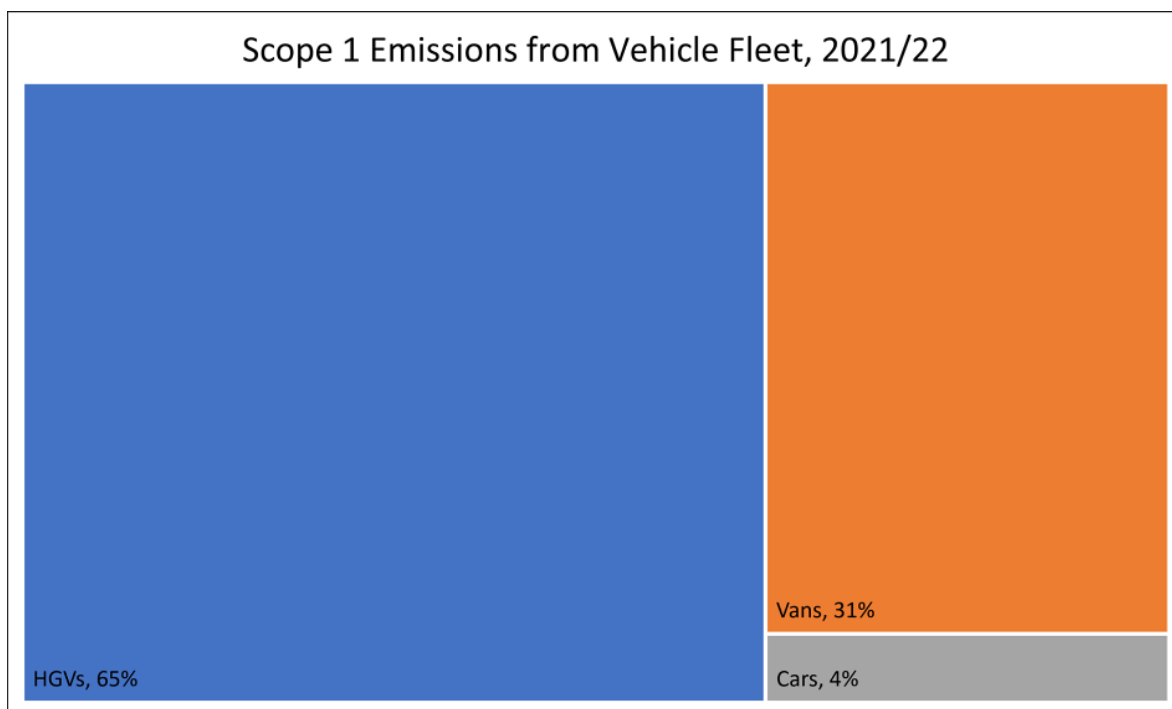


Figure 8 - Scope 1 emissions from the vehicle fleet, 2021/22

- 4.2.7. Greenhouse gas emissions arising from the generation of purchased electricity have continuously reduced since 2017/18. This is partly due to the decarbonisation of the National Grid, and partly due to a reduced energy consumption from both streetlighting and Council buildings.
- 4.2.8. Electricity from streetlighting currently accounts for 27% of Council scope 1 and 2 emissions. The rollout of citywide LED streetlighting was largely completed in 2022 and streetlights are now significantly more energy efficient. Energy consumption from streetlighting has reduced by over 21,000MWh (68.5%) since the beginning of the project in 2016/17. Electricity from Council buildings currently accounts for 28% of Council scope 1 and 2 emissions. Like with gas, a small proportion of the Council's operational estate accounts for a large proportion of CO₂e emissions from electricity in buildings, with the top 10 sites accounting for 76% of CO₂e of the Council's emissions from electricity, as shown in figure 9. The potential for increasing energy efficiency in Council buildings through deployment of smart technology is currently being explored following a pilot scheme involving Evolve and the Leechmere Centre.

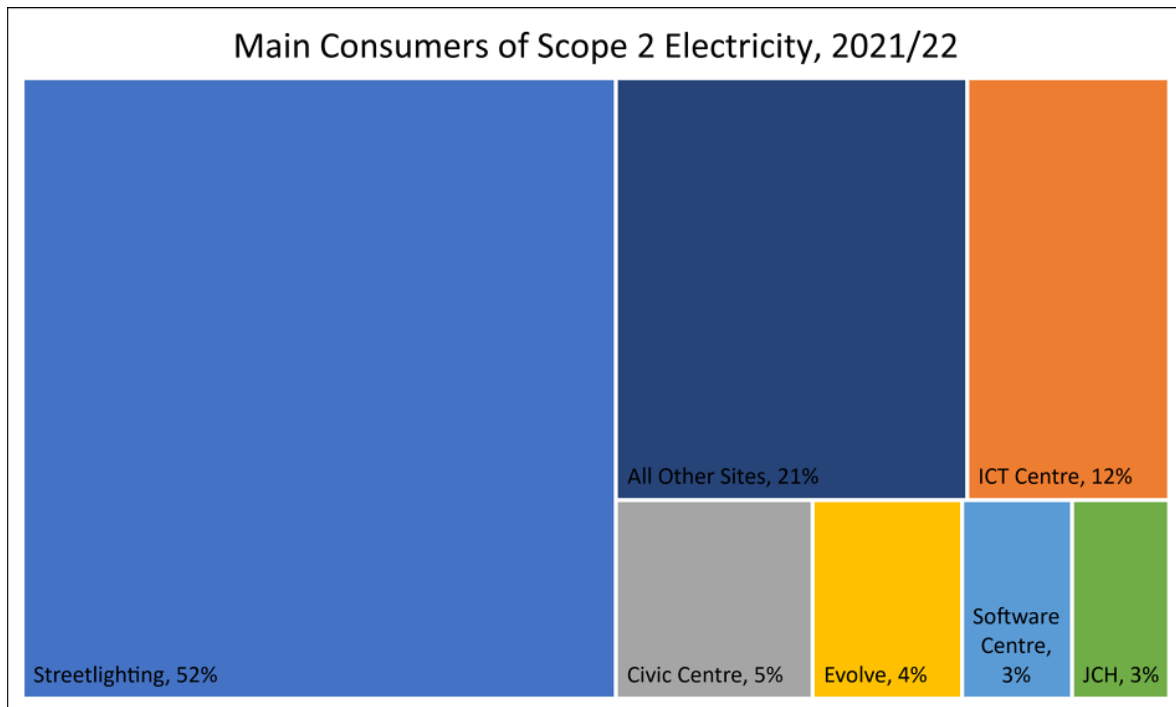


Figure 9 - Main consumers of scope 2 electricity, 2021/22

4.3. Scope 3 Emissions

4.3.1. The Council is continuing work to develop its scope 3 inventory on an ongoing basis. For most companies and organisations, scope 3 emissions are much greater than the sum of their scope 1 and 2 emissions.

4.3.2. It is not currently mandatory to report on scope 3 emissions, however as the climate emergency becomes more urgent, it is likely that scope 3 legislation will become stricter in future years. It is also important to note that the majority of scope 3 emissions for the Council can also be classed as another organisation's scope 1 and 2 emissions, although this does not detract from the Council seeking to report them as good practice or its ambitions to address these emissions to reduce them to a minimum. The Council is developing its scope 3 inventory to be as transparent as possible about the full picture of its carbon footprint, as we continue to develop and increase our access to data in relation to these emissions. This should increase our ability to drive change within our value chain. In addition to the Council having set a goal for carbon neutrality by 2030 across scope 1 and 2 emissions, the Council will work towards setting a reduction target for scope 3 emissions in the future.

4.3.3. The Council's scope 3 emissions are estimated to form 83% of overall emissions, as shown in figure 10.

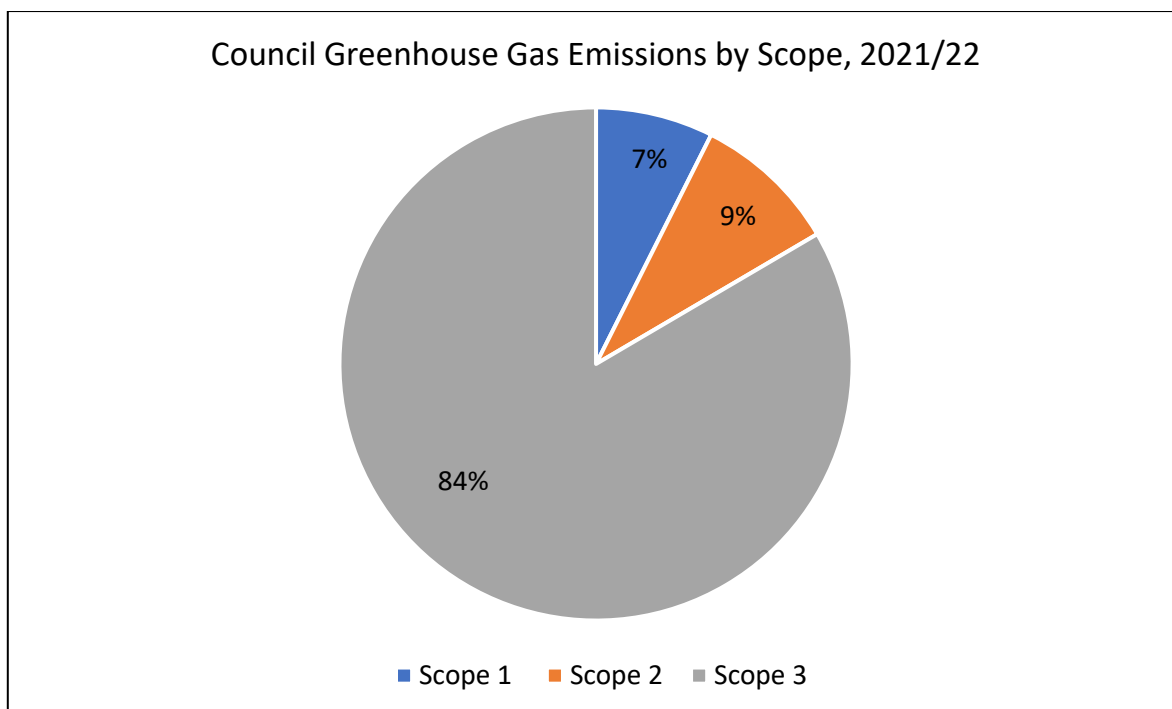


Figure 10 - Council Greenhouse Gas Emissions by Scope

4.3.4. Figure 11⁷ breaks down the Council's recorded scope 3 emissions into sources. The figure shows that purchased goods and services make up most of the Council's estimated scope 3 emissions, accounting for over two-thirds of emissions. This is reflected in the Council's Action Plan through work underway with regional colleagues in relation to procurement. Gas consumption and electricity generation in buildings outside of the Council's financial control (e.g., schools) also account for a significant proportion of estimated scope 3 emissions. Home working and commuting make up 6% of the Council's estimated scope 3 emissions.

⁷ 'All other sources' includes electricity transmission and distribution, business travel including hotel stays, SCAS fleet, water supply and treatment.

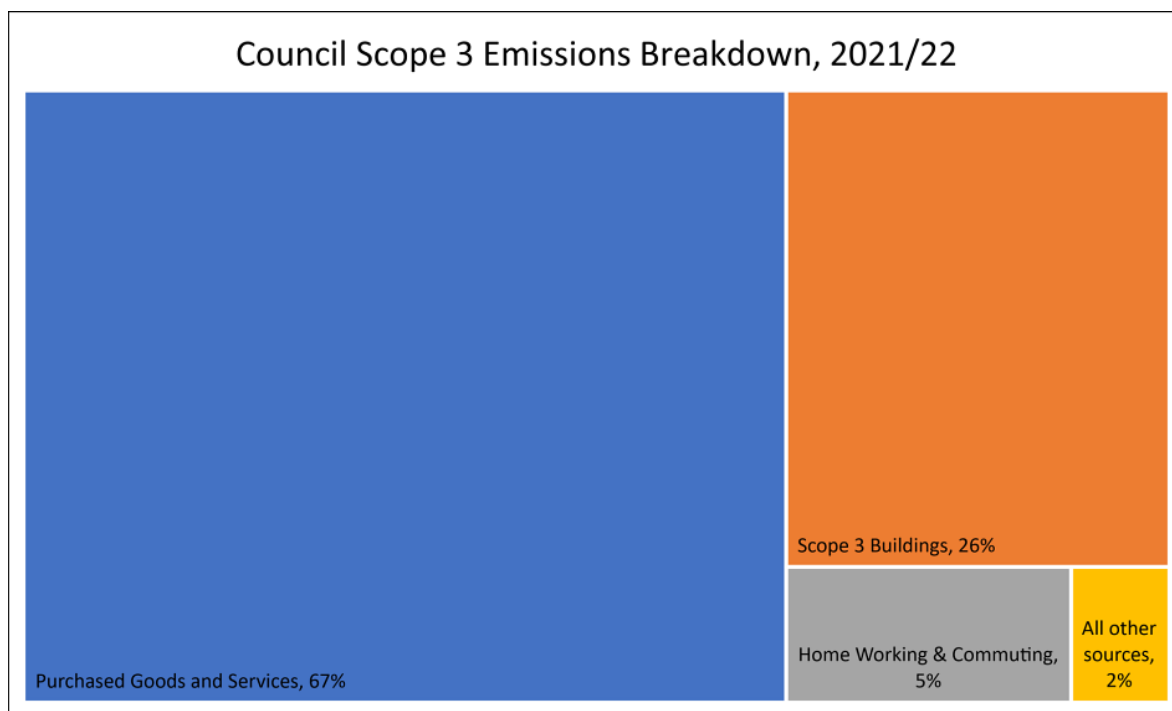


Figure 11 – Council estimated scope 3 emissions breakdown, 2021/22

- 4.3.5. Purchased goods and services are a significant emitter of greenhouse gases for the Council, accounting for 67% of the Council's estimated scope 3 emissions, and 56% of overall emissions (Scopes 1, 2 and 3 combined). Further information on the nature and reliability of the data currently available is set out in 4.3.6 and 4.3.7. Within that context, as shown in figure 12, a handful of carbon-intensive categories form a significant proportion of estimated emissions from purchased goods and services.

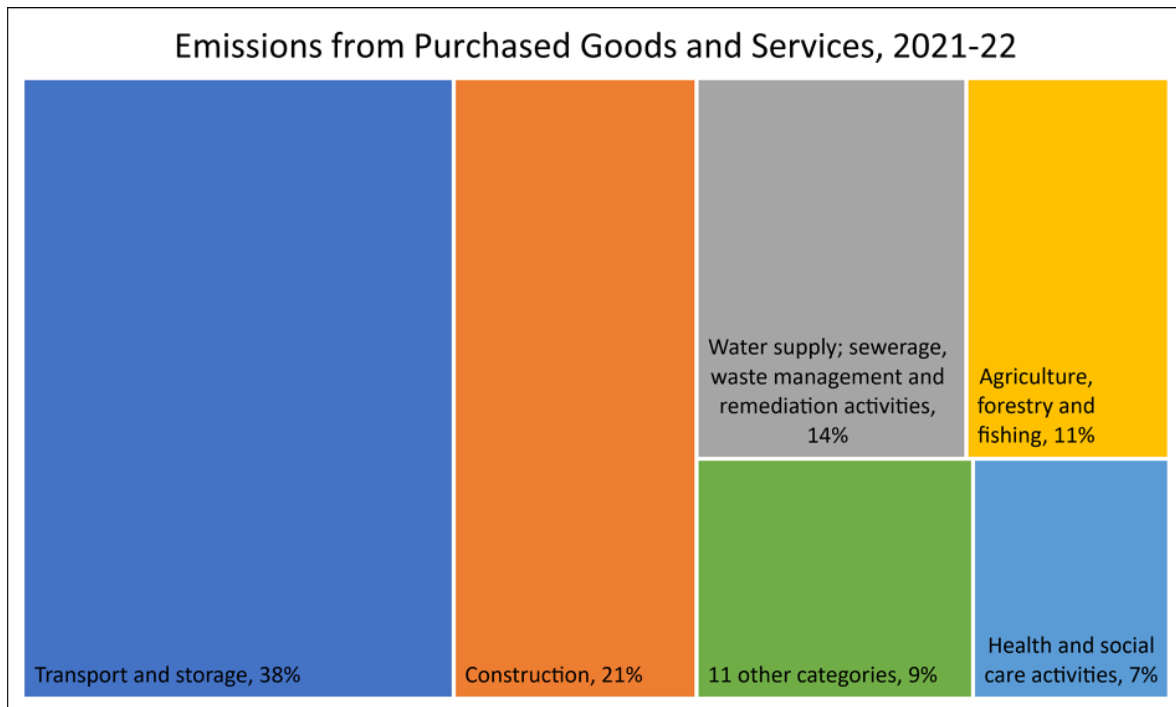


Figure 12 - Emissions from purchased goods and services, 2021-22

- 4.3.6. For many organisations, emissions from purchased goods are one of the main sources of scope 3 emissions. The Council estimated a baseline figure for purchased goods and services for the first time in 2020/21 using Environmentally Extended Input-Output data (EEIO). This method includes using spend data for the previous financial year and applying carbon intensity factors based on industry averages across different sectors. Since 2020/21, the Council has procured specialist software, which allows the organisation to undertake this baseline process with more confidence and accuracy. As a result, the 2020/21 baseline figure for purchased goods and services has been disregarded due to uncertainties over its reliability and the ability to accurately monitor progress against this as a baseline using comparable data. The 2021/22 figure will therefore provide a new baseline for this emission source.
- 4.3.7. Although there are limitations to the EEIO data method, it has allowed us to provide an approximate estimation of the most carbon intensive areas, which is an important first step. One limitation of this method is that it produces figures which are highly influenced by spend, and consequently, this method may not therefore be as accurate as direct data from suppliers of purchased goods. Using the specialist software procured, the Council aims in the future to move towards a 'hybrid' approach, where spend data is gradually phased out by direct data from suppliers, beginning with the most carbon intensive sectors from the spend-based estimations first. This will also provide a platform for the Council to liaise with these suppliers to seek to reduce their own carbon footprint.

4.3.8. Buildings identified as scope 3 include SCAS, schools and academies, nurseries, fire stations, sport and leisure complexes. Emissions from utilities in scope 3 buildings continued to fall in the 2021/22 financial year, as shown in figures 13 and 14. Emissions within Scope 3 from electricity have fallen by 2.5% and emissions from gas have fallen by 0.8% from the previous year. The COVID-19 pandemic will have contributed to this as school premises were operating at limited capacity for long periods of time during the year.

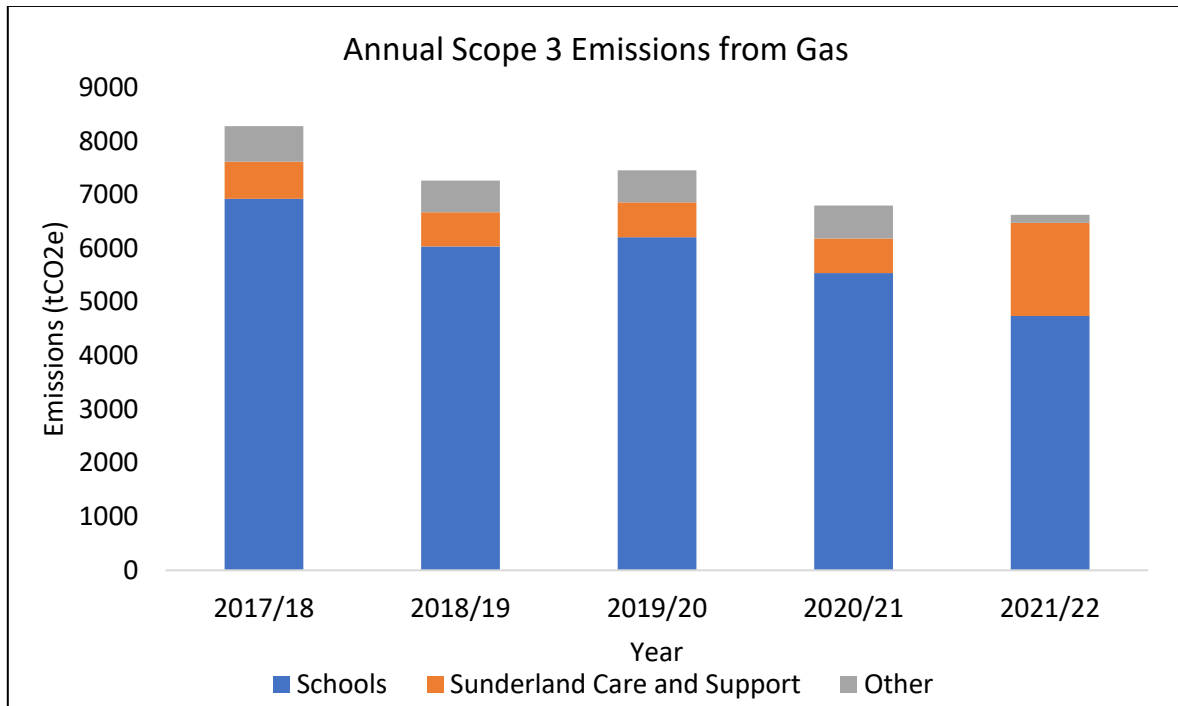


Figure 13 - Annual scope 3 emissions from gas, 2017/18 – 2021/22

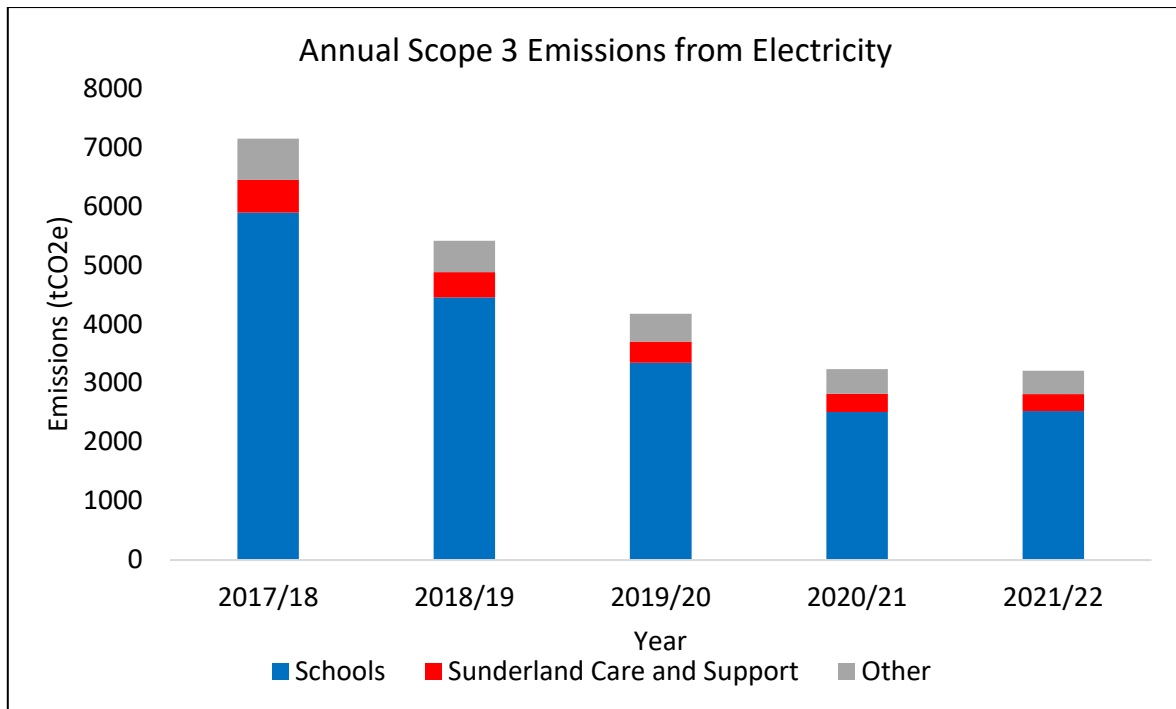


Figure 14 - Annual scope 3 emissions from electricity, 2017/18 – 2021/22

- 4.3.9. Emissions from employee commuting and homeworking since 2018/19 have been reviewed and the Council now has data for 4 years. In 2018 and 2019, most staff worked in the office full time and emissions from employee commuting were slowly rising, as shown in figure 15. During this period the Council did not estimate emissions from working from home, as this would reflect the working patterns of a very small number of colleagues. However, when the COVID-19 pandemic began, most staff were required to stay at home. During the 2020/21 financial year, due to COVID-19, most staff worked from home full time, meaning it was more appropriate to estimate emissions associated with this as opposed to commuting. The Council now analyses both home working and employee commuting emissions, in line with the hybrid working approach the Council has adopted since the pandemic. Figure 15 shows that during 2020/21 and 2021/22, emissions from employee commuting and home working have been lower than in the two years before, indicating that including home working will remain beneficial to the Council's carbon footprint, unless the modal share of petrol and diesel cars for commuting is significantly reduced and replaced by active and low carbon transport.

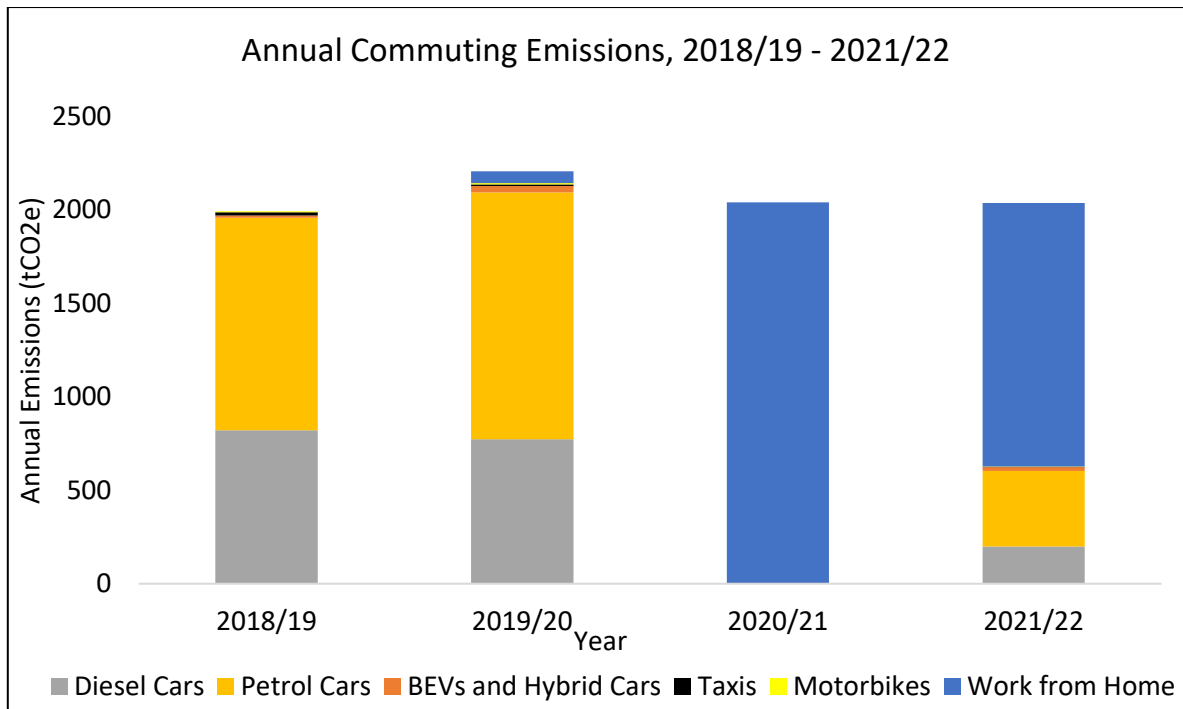


Figure 15 - Annual Emissions from Commuting and Home Working, 2018/19 - 2021/22

- 4.3.10. Emissions from business travel reduced from the years 2018/19 to 2020/21, but in 2021/22 have increased as shown in figure 16. This increase is a natural increase due to COVID-19 restrictions being lifted during the 2021/22 financial year. This increase is primarily due to grey fleet miles increasing, whereas emissions reported from public transport, flights and hotel stays remain low. It is hoped that as the UK continues to move out of the COVID-19 pandemic, some of the benefits from reduced business travel can continue to be adopted through hybrid working. It is notable that emissions from business travel remain significantly below pre-pandemic levels.

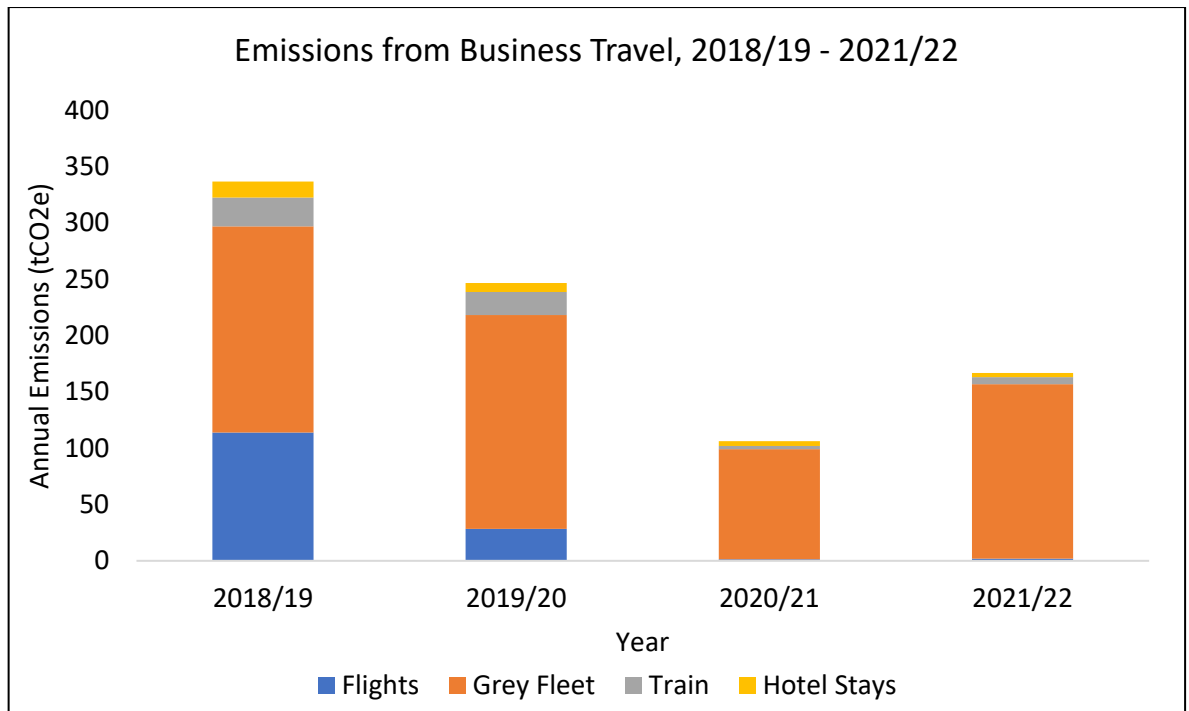


Figure 16 - Emissions from Business Travel, 2018/19 - 2021/22

5. Sunderland's citywide carbon footprint

5.1. Overview

5.1.1 The 2020 BEIS update for citywide emissions estimates was released in June 2022 and represents the most recent carbon emission data available. The data shows that in 2020 Sunderland released a net 1,039,057.32ktCO₂. This is comprised of 1,046,456.63 tonnes emitted from industrial, commercial, public, domestic, agriculture and transport sectors and 7,499.31 tonnes offset by Land Use, Land Use Change and Forestry (LULUCF). It is important to note that emissions in 2020 will have been impacted by COVID-19.

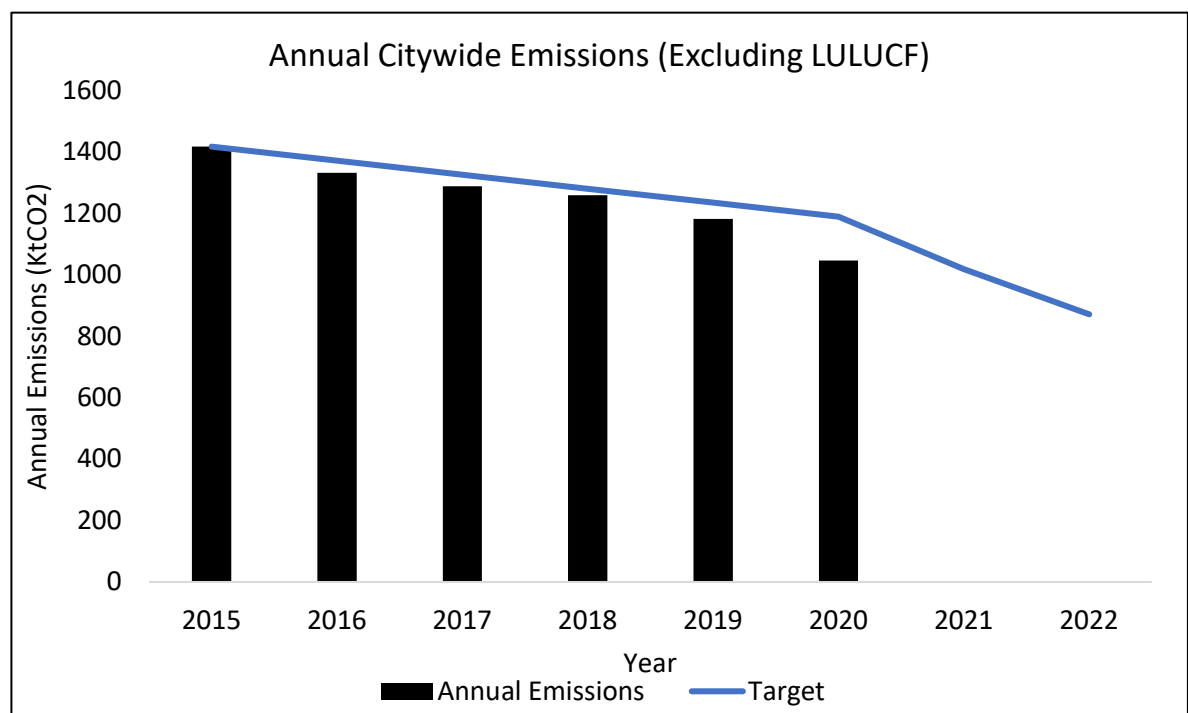


Figure 17 - Annual citywide emissions (excluding LULUCF), 2015 - 2020

- 5.1.2. In 2020, citywide emissions decreased by 11.5% from 2019 levels and they have reduced by 26.1% over five years from 2015 levels. This means that the city has achieved its interim 2020 target of a 16.1% reduction in annual citywide emissions between 2015 and 2020 when compared against the targets set by the Tyndall Centre.
- 5.1.3. It is also clear that carbon reductions need to significantly accelerate post-2020 to meet the more ambitious indicative recommendations for carbon reduction, including a target annual reduction of 14.4% annually from 2020 onwards. Sunderland has used 3.487 million tonnes of the 5.8 million tonnes allocated for the 2018 – 2022 five-year period (as shown in table 2). The city therefore has a remaining carbon budget of 2.3 million tonnes, for 2021 and 2022, to ensure that the recommended goal of staying within this five-year budget is met. This is part of Sunderland's longer-term overall budget of 8.2 million tonnes. During the following 5-year period (2023 – 2027) the city's carbon budget is 2.8 million tonnes, which is significantly lower than the 5.8 million tonnes for the current period.
- 5.1.4. Figure 18 shows the breakdown of citywide CO₂ emissions in Sunderland by sectors in 2019. Figure 19 then shows how overall sectoral emissions have changed over time since the city's baseline year of 2015.

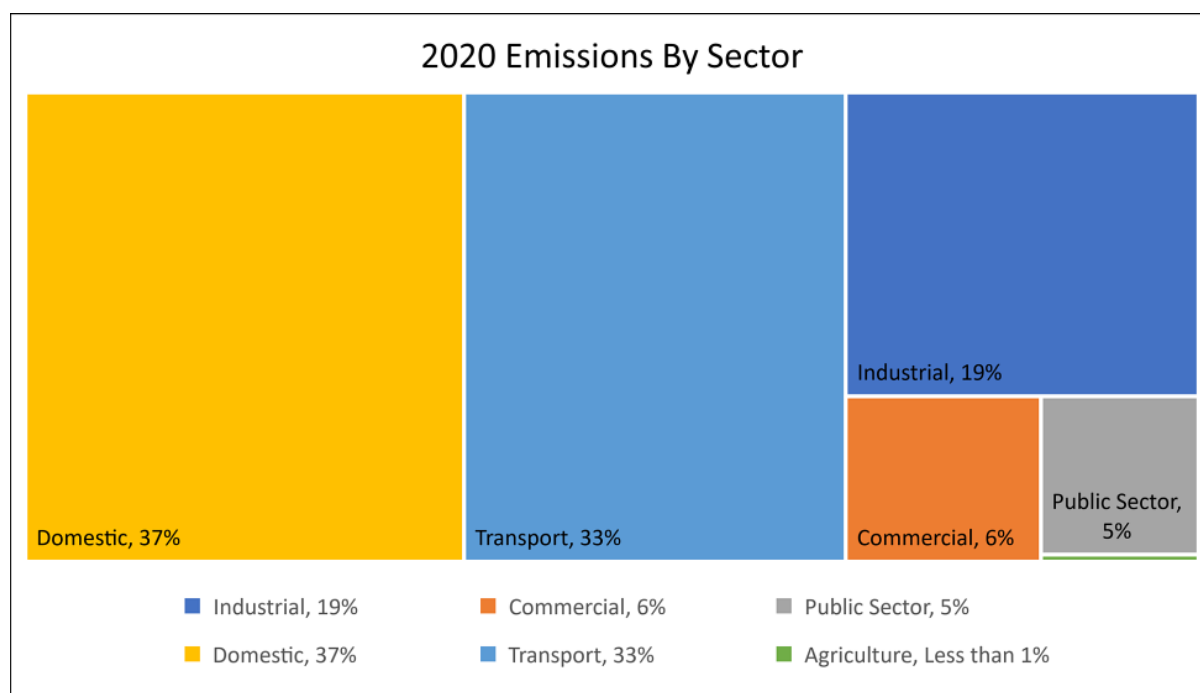


Figure 18 - 2020 Citywide Emissions by Sector

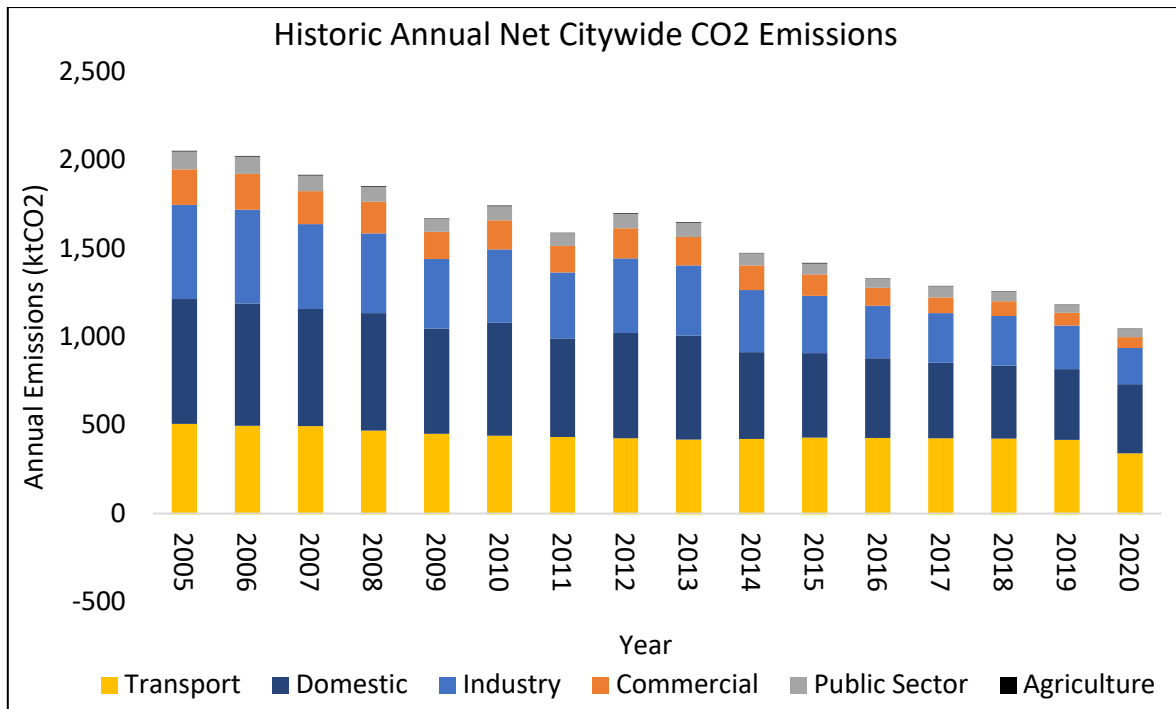


Figure 19 - Historic annual net citywide carbon emissions

5.1.5. Domestic energy and transport have historically been the two major emitters of CO₂ in Sunderland and accounted for over two thirds of annual citywide CO₂ emissions in 2020. Emissions from all sectors have reduced since 2005, albeit some sectors are undergoing emissions reduction at much higher rates than other sectors in the city.

Between 2019 and 2020:

- Emissions from industrial energy decreased by 17.3%
- Emissions from commercial energy decreased by 15.7%
- Emissions from the public sector increased by 6.7%
- Emissions from domestic energy decreased by 2%
- Emissions from transport decreased by 18.3%
- Emissions from agriculture experienced no change.
- Natural offsetting of emissions through the LULUCF sector decreased by 4.7%.

Since 2015 (carbon budget baseline):

- Emissions from industrial energy decreased by 37.1%
- Emissions from commercial energy decreased by 49%
- Emissions from the public sector decreased by 23.6%
- Emissions from domestic energy decreased by 18.1%
- Emissions from transport decreased by 20.8%
- Emissions from agriculture decreased by 12.7%
- Natural offsetting of emissions through the LULUCF sector decreased by 8.3%

5.1.6 The remainder of this section covers emissions from each of the individual sectors in turn, setting out the position from 2015 to 2020 and considering

current performance in relation to the city's overall carbon budget reduction target. It is recognised that the impact of Covid-19 on 2020 emissions is likely to have been different across different sectors.

5.2. Industrial Emissions

5.2.1. Emissions from the industrial sector in 2020 reduced by 17.3% compared to 2019. Figure 20 shows how the industrial sector is performing against its target, when apportioned against an equal share of the carbon budget reduction target (against the 2015 baseline). The industrial sector is ahead of the apportioned 2020 target for decarbonisation.

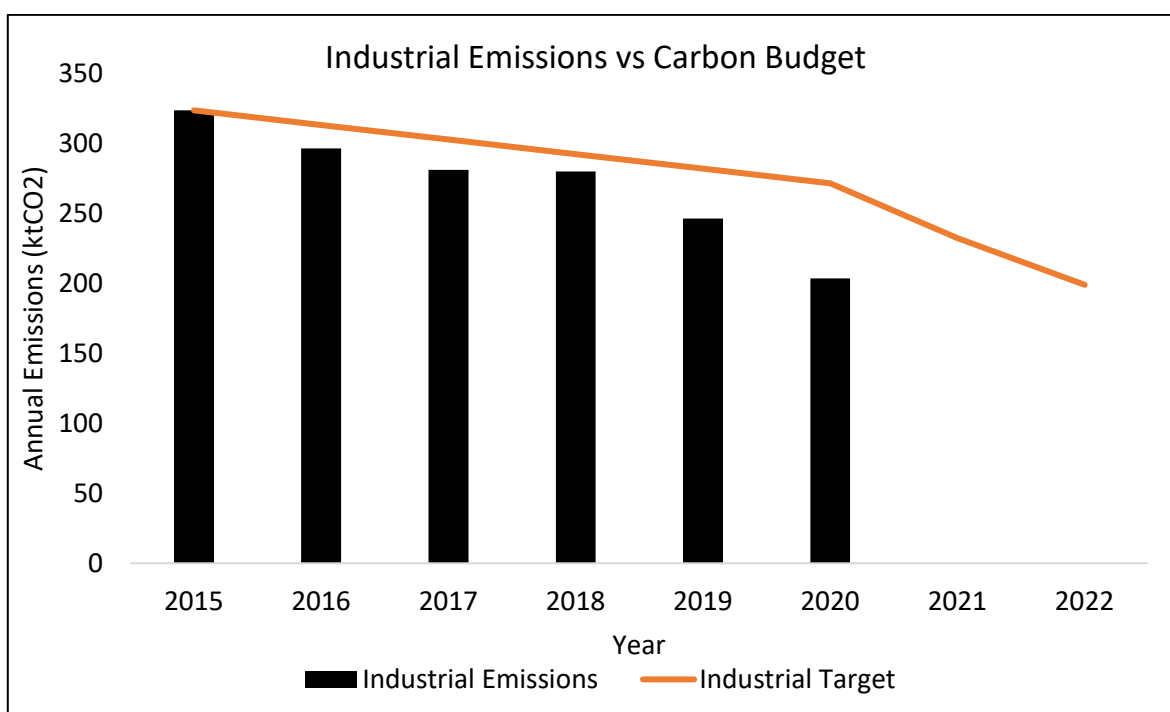


Figure 20 - Industrial emissions progress against an equal share of the carbon budget reduction target

5.2.2. Figure 21 shows the emissions from the industrial sector broken down into electricity, gas, large industrial installations and other fuels. Most emissions from industry are caused by electricity, gas and other fuels. For reference, since the previous year (2019), three of the four emissions sources experienced emission reductions. Industrial sector reductions in 2020 include:

- 26% decrease in emissions from electricity.
- 12% decrease in emissions from gas.
- 11% decrease in emissions from other fuels.
- 45% increase in emissions from large industrial installations.

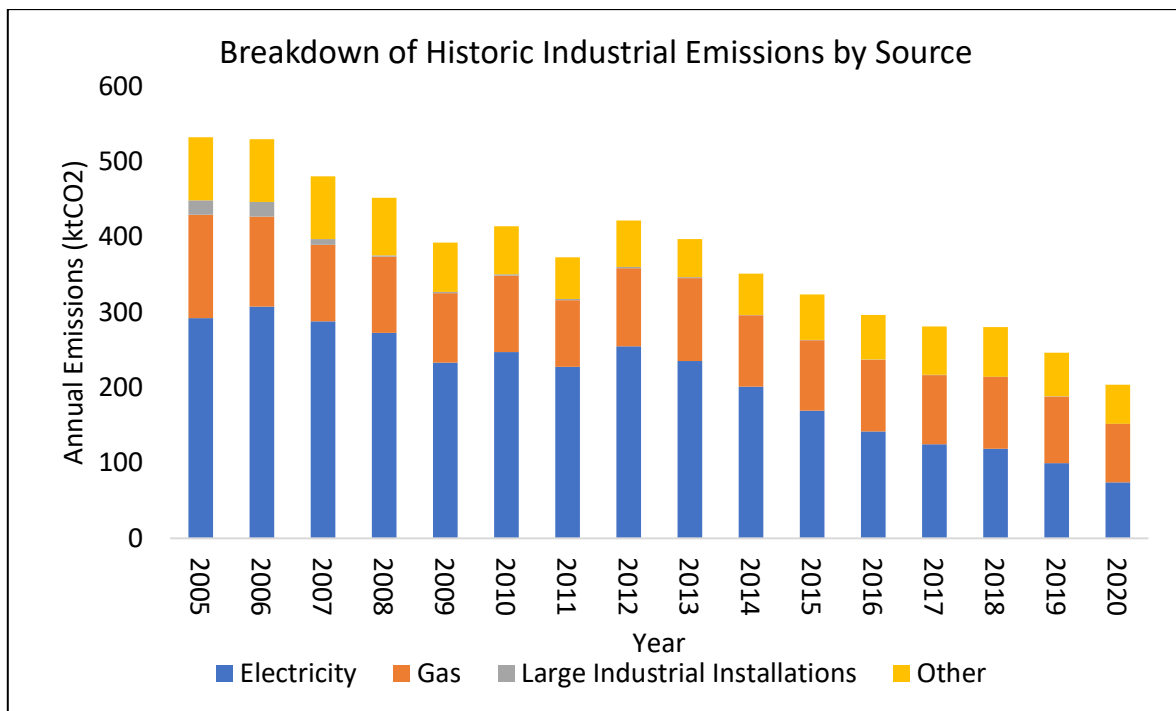


Figure 21 – Breakdown of historic industrial emissions by source

5.2.3. In relation to comparison data, as can be seen in Figure 22, industrial emissions in Sunderland reduced at a faster rate in 2019 and 2020, from the 2015 baseline, than the average rate of reduction in those years for the North East region as well as for the UK overall. The rate of emissions reduction since the 2015 baseline year from industry in Sunderland is shown to be less than the average reduction rate for the North East, but greater than the UK average rate. It is likely that the impact of Covid-19 is reflected at least in part in the emissions reductions in this sector in 2019 and 2020.

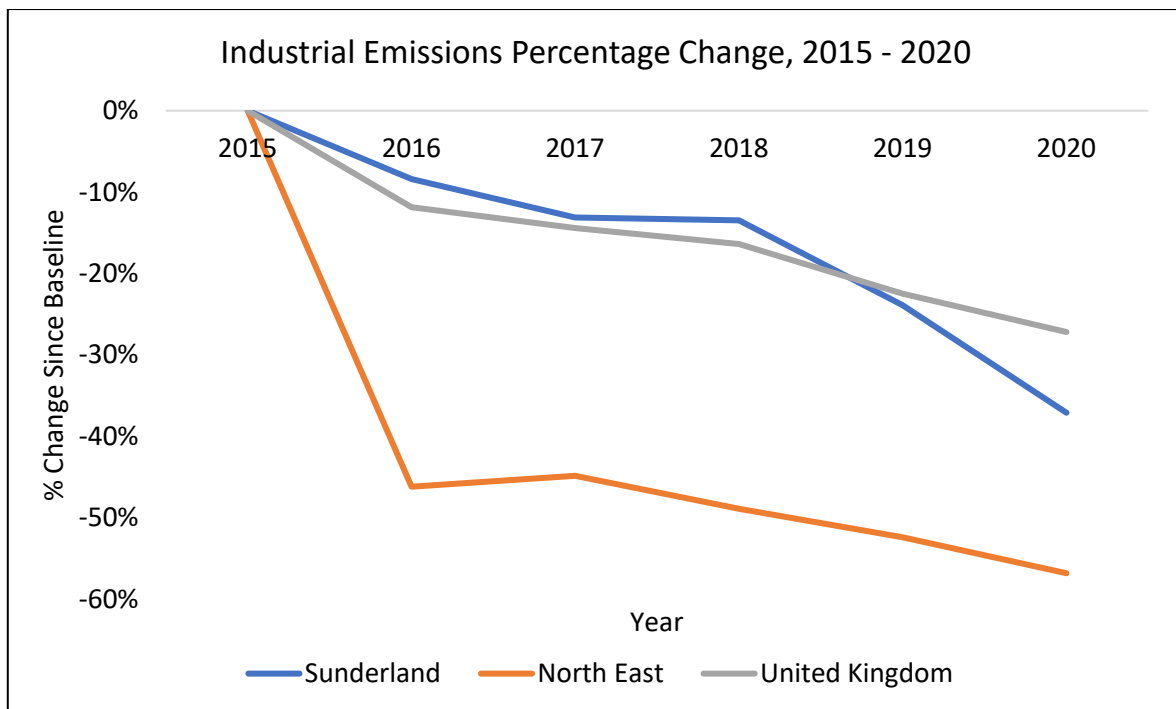


Figure 22 - Percentage reduction in industrial emissions between 2015 - 2020 in Sunderland, North East England and the UK

5.3. Commercial Emissions

- 5.3.1. Emissions from the commercial sector in 2020 reduced by 15.7% compared to 2019, a slightly lower reduction than for industrial emissions. Figure 23 shows how the commercial sector is performing against its target, when apportioned against an equal share of the carbon budget reduction targets (against a 2015 baseline). The commercial sector is significantly ahead of the apportioned 2020 target for decarbonisation.

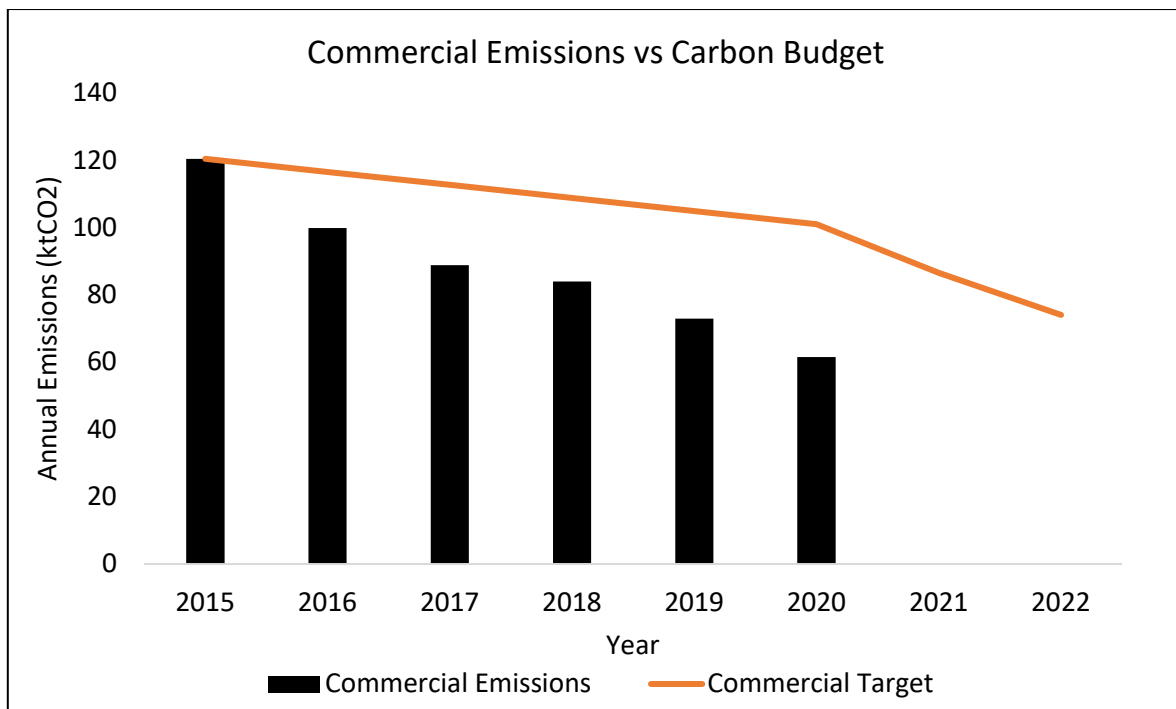


Figure 23 - Commercial emissions progress against an equal share of the carbon budget reduction target

5.3.2. Figure 24 shows the emissions from the commercial sector broken down into electricity, gas and other fuels. Most commercial emissions are caused by electricity consumption. Historically, the rate at which this is reducing is faster than that for gas, which was also true for the breakdown from 2019 to 2020:

- 25% decrease in emissions from electricity.
- No change in emissions from gas.
- 49% decrease in emissions from other fuels.

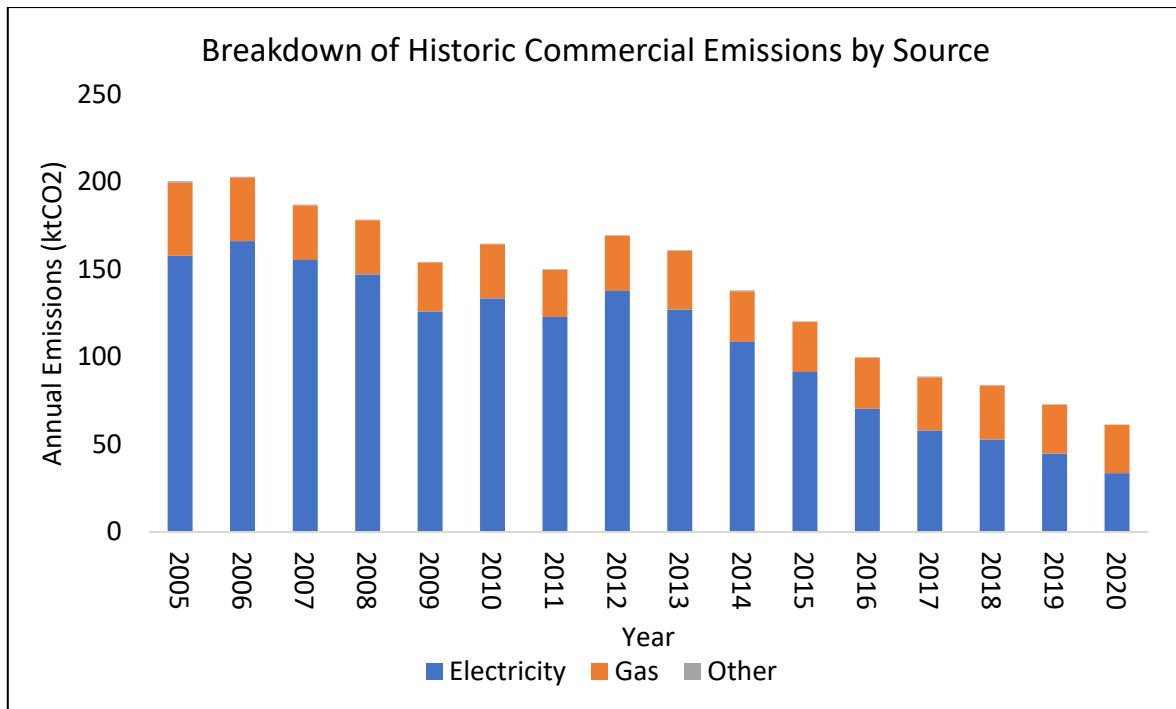


Figure 24 – Breakdown of historic commercial emissions by source

5.3.3. In relation to comparison data, as can be seen in Figure 25, commercial emissions in Sunderland have been reducing at a slightly faster rate than the average for the North East region since 2017, as well as for the UK overall, from the 2015 baseline.

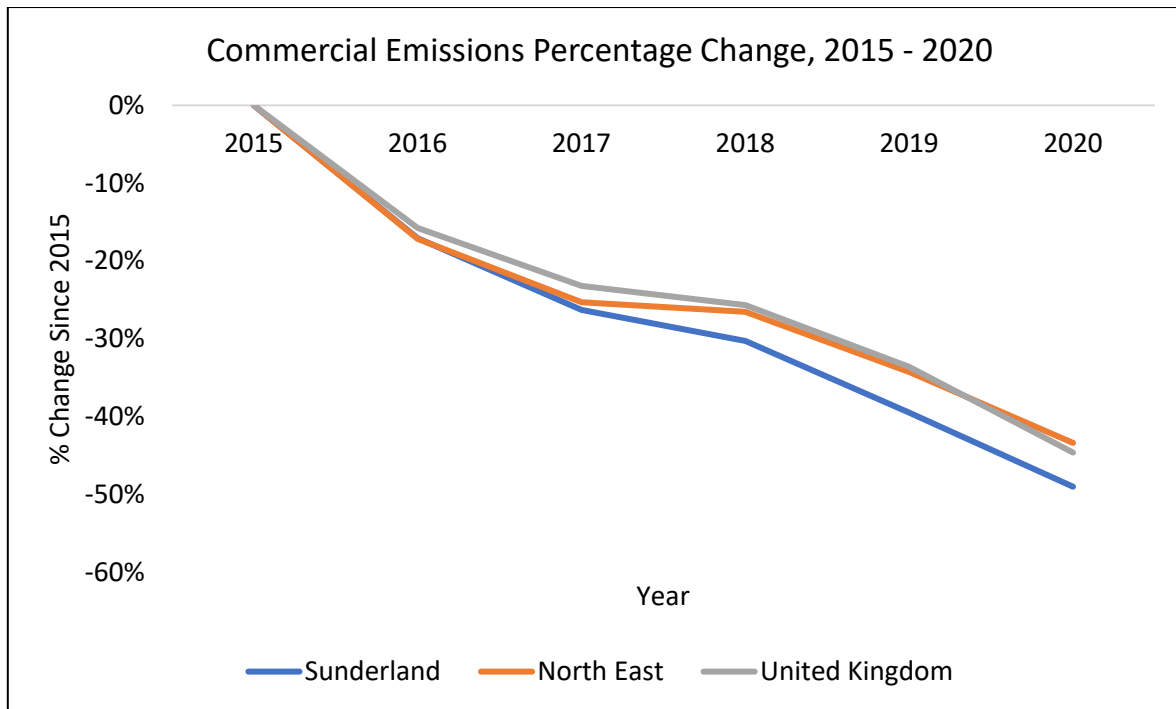


Figure 25 - Percentage reduction in commercial emissions between 2015 - 2020 in Sunderland, North East England and the UK

5.4. Public Sector Emissions

5.4.1. Emissions from the public sector in 2020 increased by 6.7% compared to 2019. Figure 26 shows how the public sector is performing against its target, when apportioned against an equal share of the carbon budget reduction targets (compared to a 2015 baseline). Emissions from the public sector against each apportioned annual target have been fluctuating since 2015, although overall, the public sector is ahead of its proportionate share.

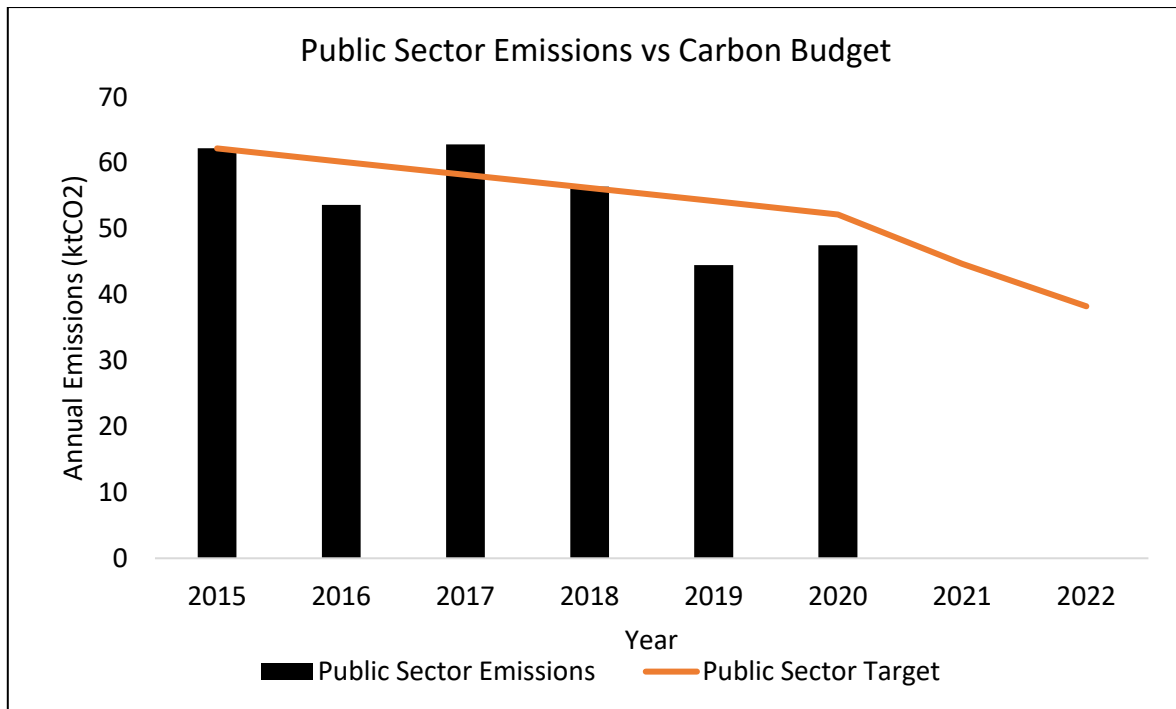


Figure 26 - Public sector emissions progress against an equal share of the carbon budget reduction target

5.4.2. Figure 27 shows the emissions from the public sector broken down into electricity, gas and other fuels. Historically, electricity was the main cause of public sector emissions. However, the decarbonisation of the National Grid, coupled with the limited reduction in emissions from gas in the public sector, has resulted in gas now becoming the main source of emissions. In 2020 the city's public sector experienced:

- 22% decrease in emissions from electricity.
- 36% increase in emissions from gas.
- 97% decrease in emissions from other fuels.

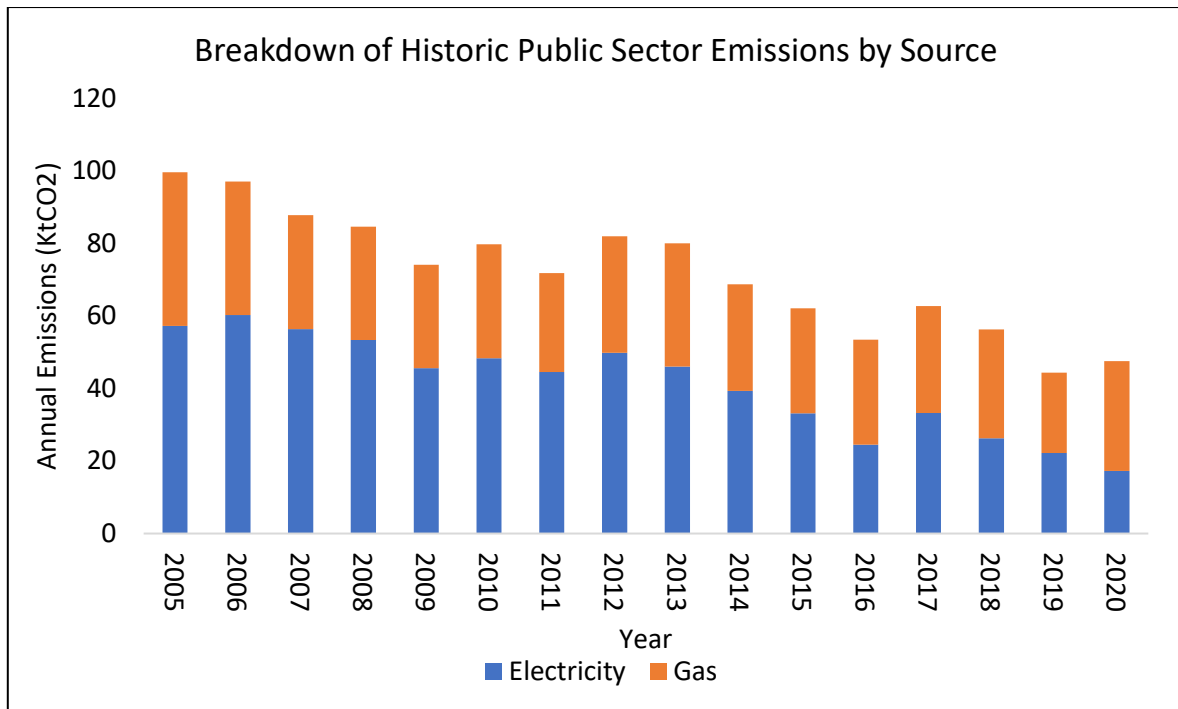


Figure 27 – Breakdown of historic public sector emissions by source

5.4.3. Finally, as can be seen below in Figure 28, the current rate of decarbonisation within the public sector is slightly higher than the average for the North East region as well as for the UK overall.

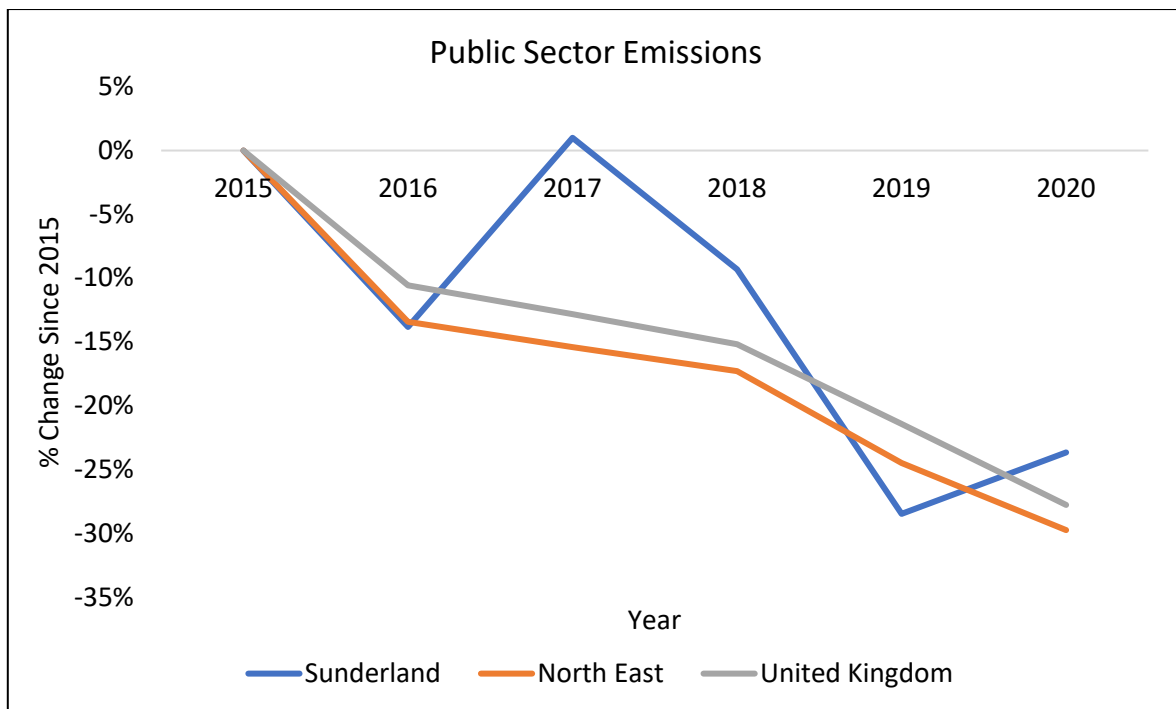


Figure 28 - Percentage reduction in public sector emissions 2015 - 2020 in Sunderland, North East England and the UK

5.5. Domestic Emissions

5.5.1. Emissions from the domestic sector in 2020 reduced by 2% compared to 2019. Figure 29 shows how the domestic sector is performing against its target, when apportioned against an equal share of the carbon budget reduction targets (against a 2015 baseline). An acceleration in emissions reductions in the domestic sector will be required in 2021 and 2022 to continue to meet the apportioned target going forward.

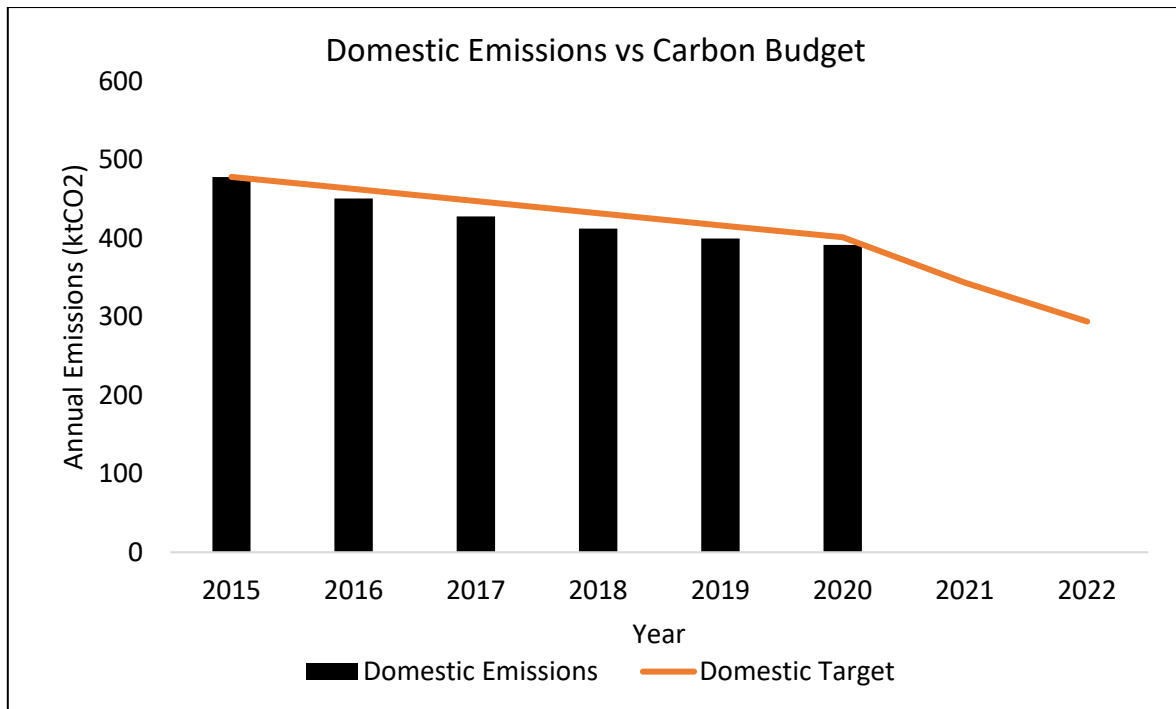


Figure 29 - Domestic emissions progress against an equal share of the carbon budget reduction target

5.5.2. Figure 30 shows domestic emissions broken down into electricity, gas and other fuels. Gas contributes to a large proportion of domestic emissions and has also been decarbonising slower than both electricity and other fuels have. Last year the city's domestic sector experienced:

- 6% decrease in emissions from electricity.
- 1% increase in emissions from gas.
- 2% decrease in emissions from other fuels.

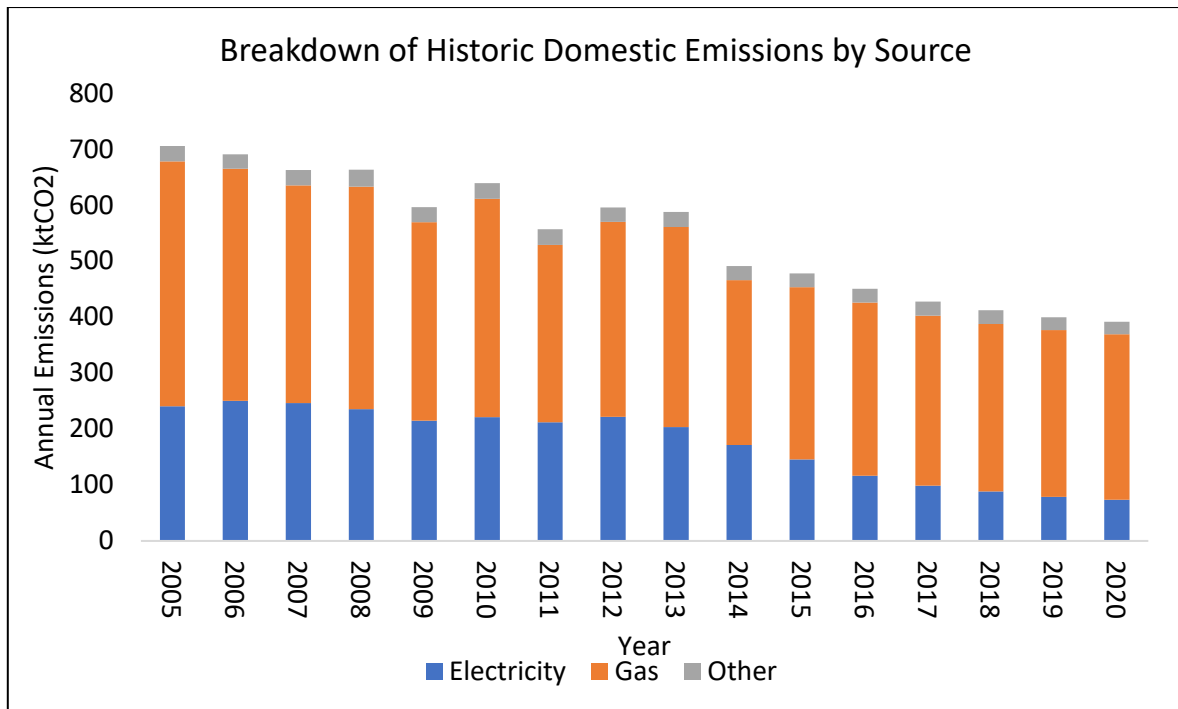


Figure 30 – Breakdown of historic domestic emissions by source

5.5.3. In relation to comparison data, as can be seen below in Figure 31, domestic emissions in Sunderland are reducing at a slightly quicker rate than the average for both the North East region and the UK, from the 2015 baseline.

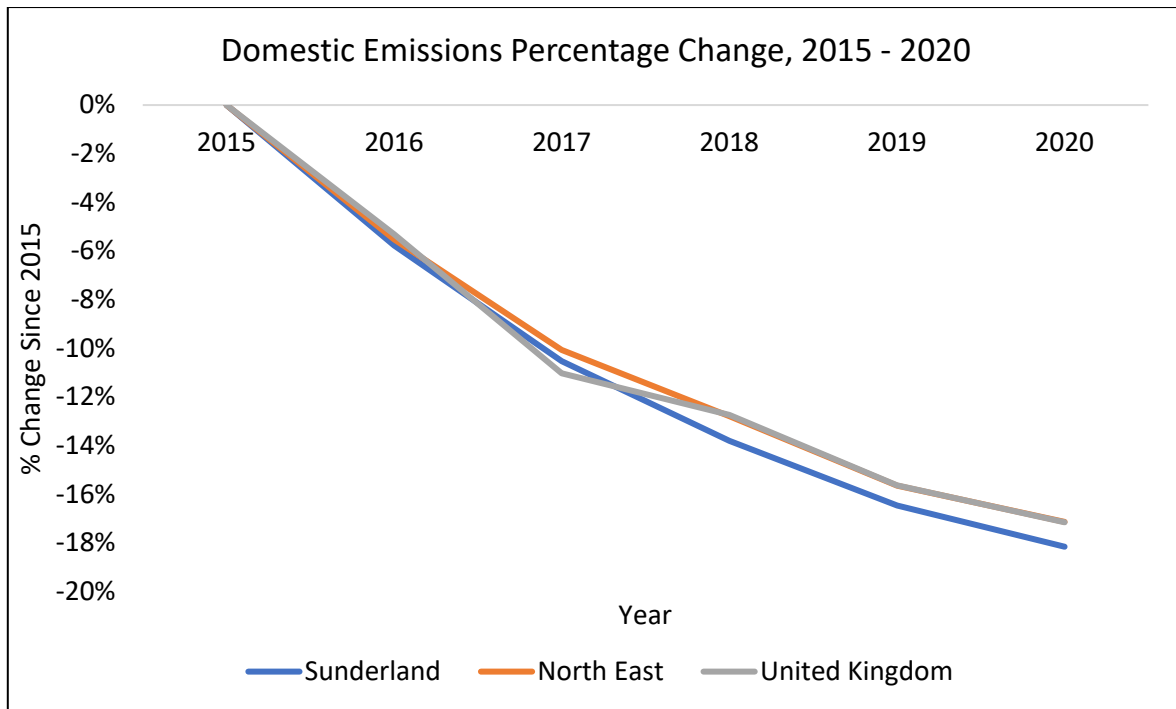


Figure 31 - Percentage reduction in domestic emissions between 2015 - 2020 in Sunderland, North East England and the UK

5.6. Transport Emissions

- 5.6.1. Transport sector emissions in 2020 reduced by 18.3% compared to 2019. Figure 32 shows how the transport sector is performing against its target, when apportioned against an equal share of the carbon budget reduction targets (against a 2015 baseline). Up to and including 2019, the transport sector was behind its apportioned target for decarbonisation. Transport emissions decreased significantly during 2020 as a result of the COVID-19 pandemic, although it is expected that emissions will be shown to have risen again in 2021 once this data is available. A significant acceleration in transport emissions reductions will be required to seek to bring these in line with the apportioned target going forward.

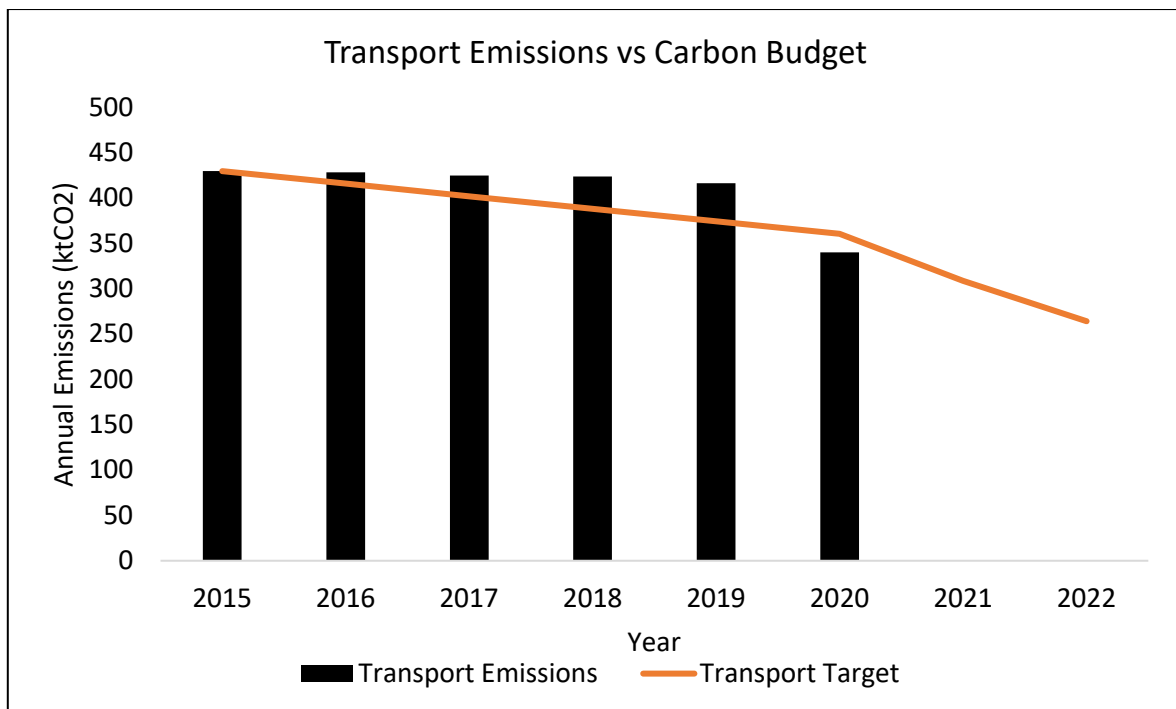


Figure 32 - Transport emissions progress against an equal share of the carbon budget reduction target

5.6.2. Figure 33 shows transport emissions broken down into roads, railways and other. Historically, emissions from roads have been a major source of transport emissions in the city. Last year the transport sector experienced:

- 23% decrease in emissions from A roads.
- 26% decrease in emissions from motorways.
- 14% decrease in emissions from minor roads.
- 23% decrease in emissions from diesel railways.
- 9% decrease in emissions from other transport.

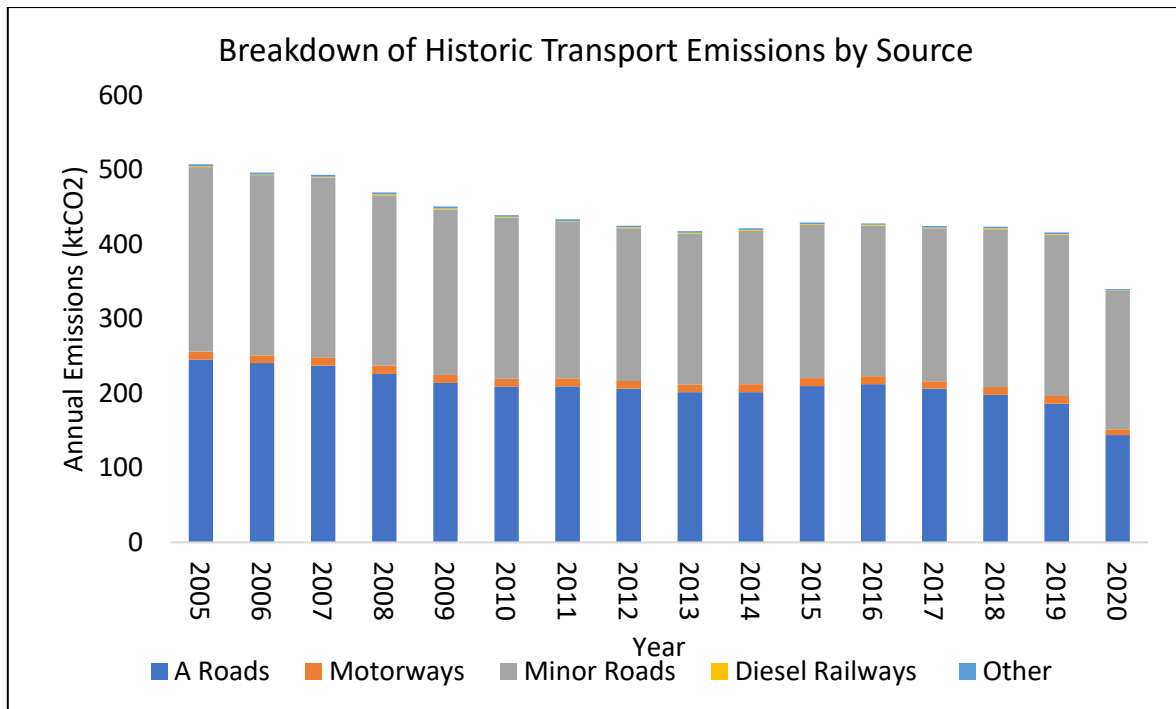


Figure 33 - Historic transport emissions breakdown

5.6.3. In relation to comparison data, it is clear from figure 34 that transport is a significant challenge for the city, the North East and the UK as a whole. Decarbonisation of the transport sector in Sunderland is slower than that for other sectors, although Sunderland is reducing transport emissions slightly quicker than both the North East and the UK national average.

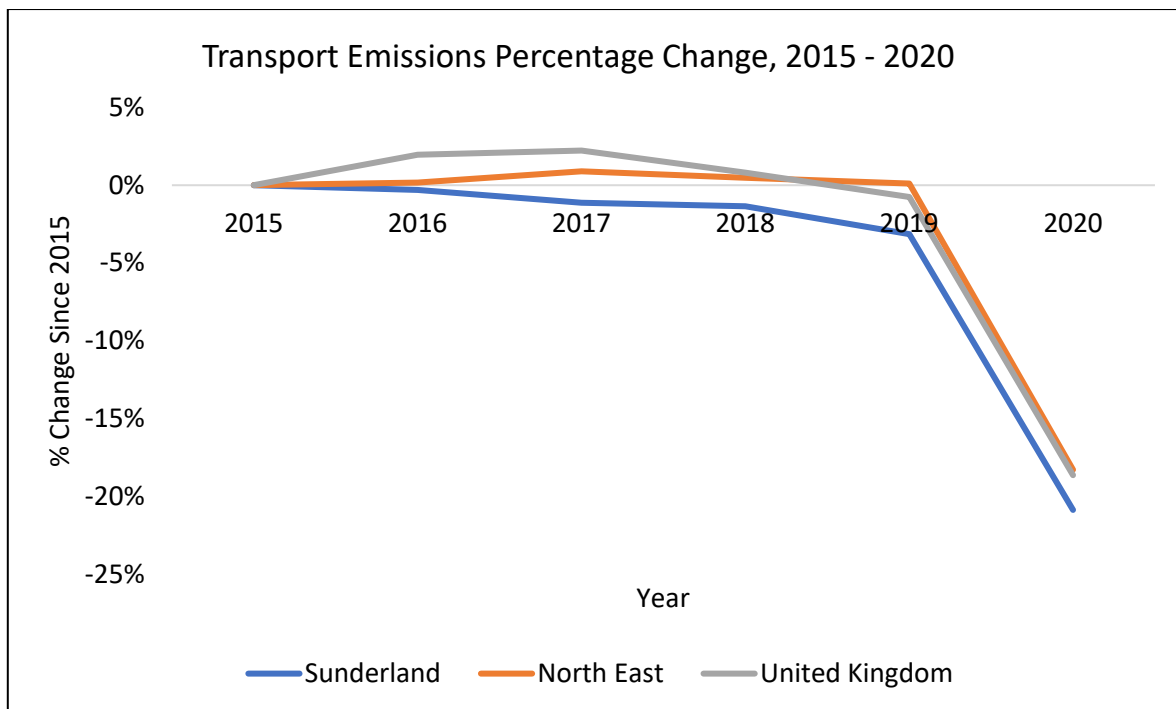


Figure 34 - Percentage reduction in transport emissions between 2015 - 2020 in Sunderland, North East England and the UK

5.7. Agriculture Sector Emissions

5.7.1. Emissions from the agriculture sector in 2020 experienced a very small reduction compared to 2019. Figure 35 shows how the agriculture sector is performing against its target, when apportioned against an equal share of the carbon budget reduction targets (against a 2015 baseline). Up to and including 2018, the agriculture sector was ahead of its apportioned target, although since then, this area has been falling behind. This is reflected in data set out earlier in 5.1.6, and results in the associated reduction in the extent to which LULCF sector emissions offset overall city-wide emissions in 2020. It should be noted however that emissions

from this sector within the city (at less than 1% as shown in Figure 18) are very low compared to all other sectors.

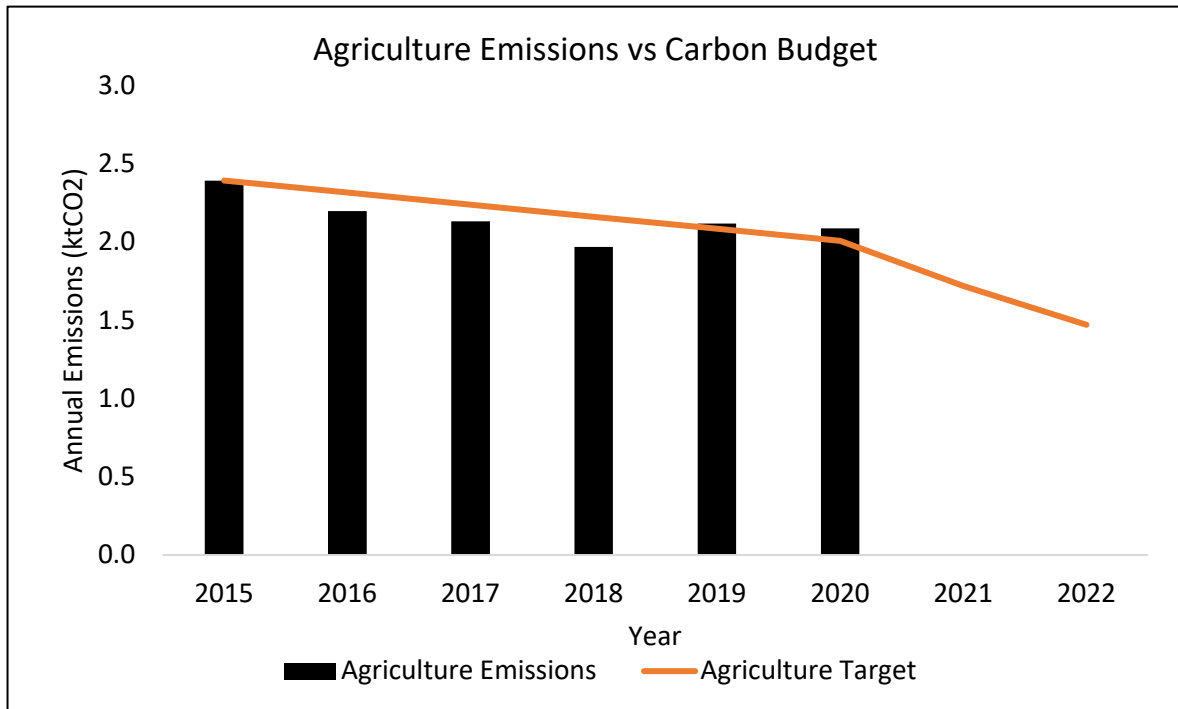


Figure 35 - Agriculture emissions progress against an equal share of the carbon budget reduction target

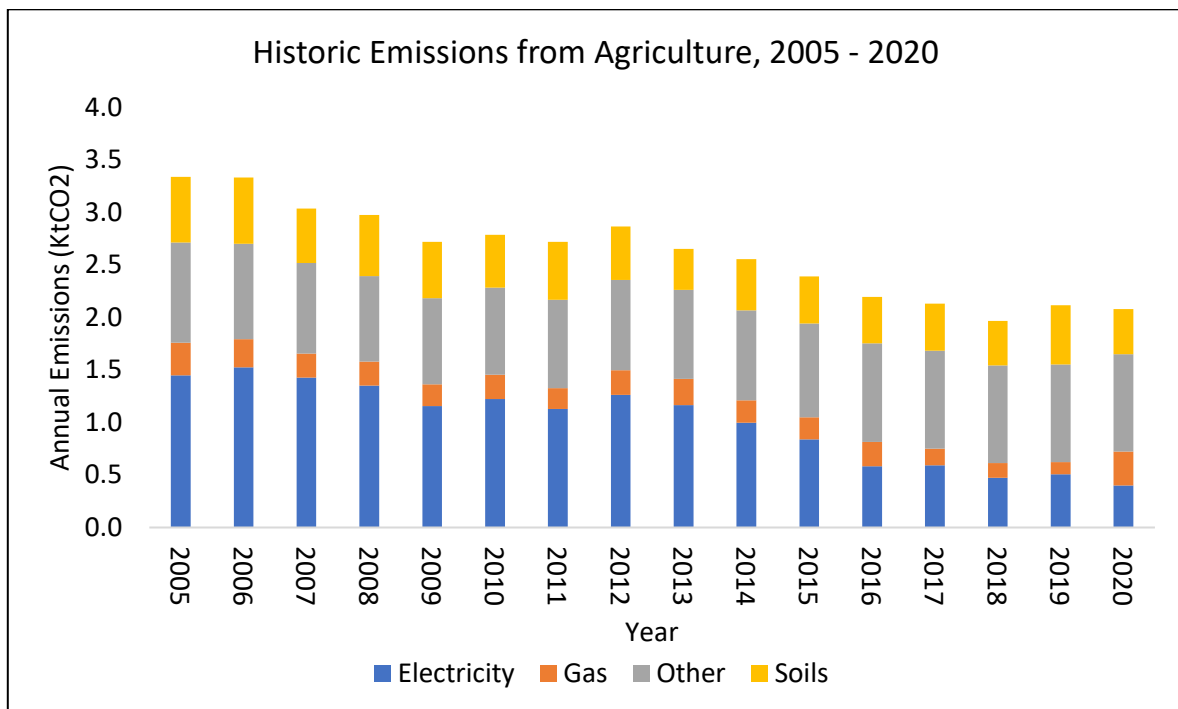


Figure 36 - Historic Emissions from Agriculture Breakdown

As can be seen in Figure 37, emissions from the agriculture sector in Sunderland are reducing at a quicker rate than the average, from the 2015 baseline, for both the North East region and the UK for both of which this sector is larger

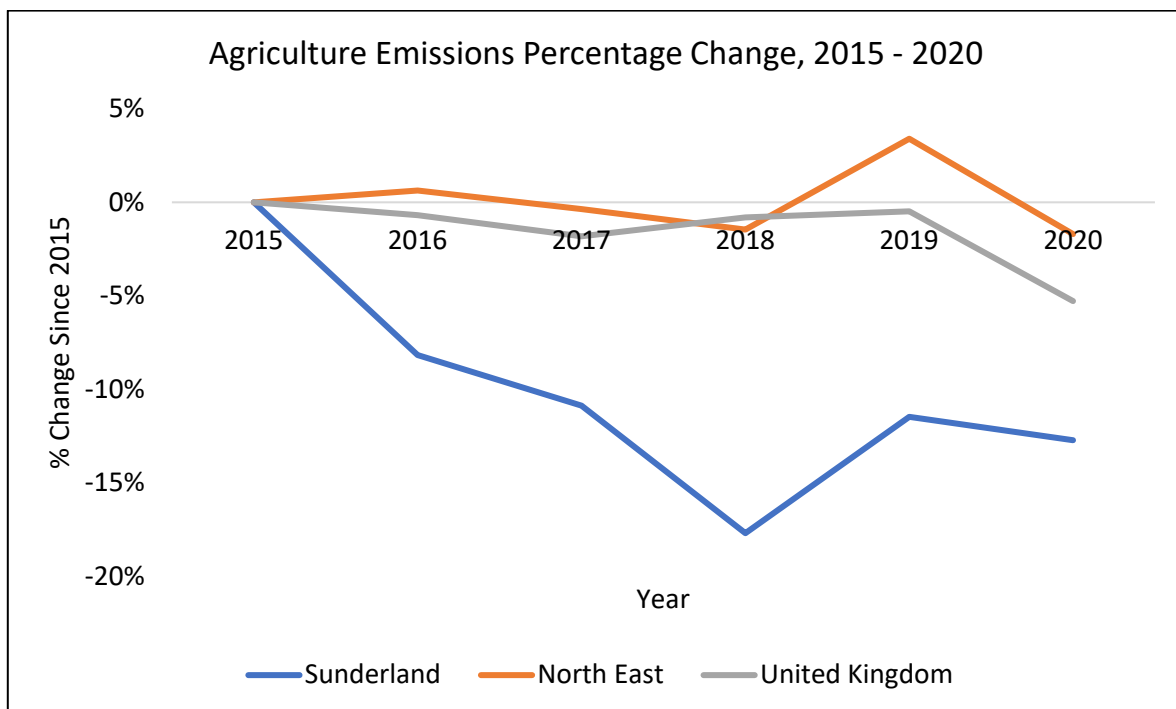


Figure 37 - Percentage reduction in transport emissions between 2015 - 2020 in Sunderland, North East England and the UK

5.8. Sequestration and Net Emissions from Land Use, Land Use Change and Forestry (LULUCF)

- 5.8.1. Net sequestration in 2020 from the LULUCF sector experienced a 4% decrease from 2019 levels (a reduction from 7,864 tonnes to 7,499 tonnes), as shown in figure 38. Net sequestration reduced to a similar level to as in 2016. This was primarily due to an increase in emissions from cropland, as shown in figure 39.

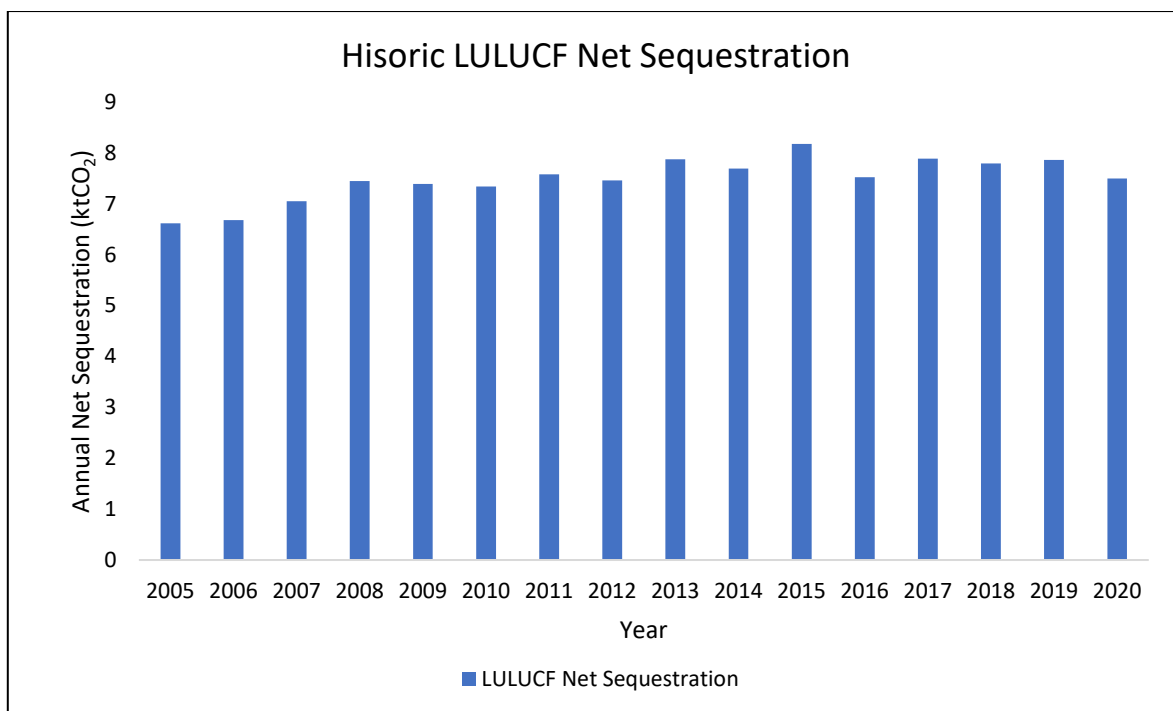


Figure 38 – Historic annual net carbon sequestration from the LULUCF sector

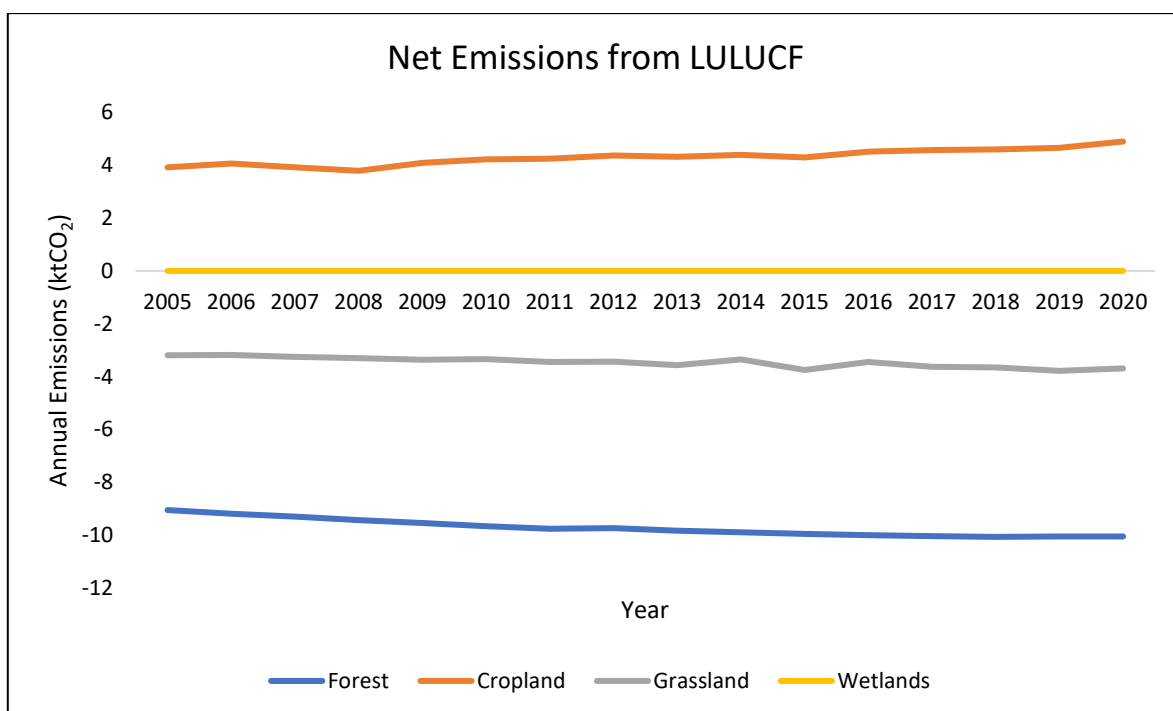


Figure 39 - Net emissions from LULUCF sector by source

5.8.2. Historically, the UK has been reducing carbon emissions (and increasing carbon sequestration) from the LULUCF sector at a faster rate than Sunderland, as reflected in figure 40. It is expected that this is because the UK average includes large rural areas. The Council's Low Carbon Action Plan includes programmes such as the development of the NE

Community Forest which is expected to increase levels of carbon sequestration over time alongside wider benefits.

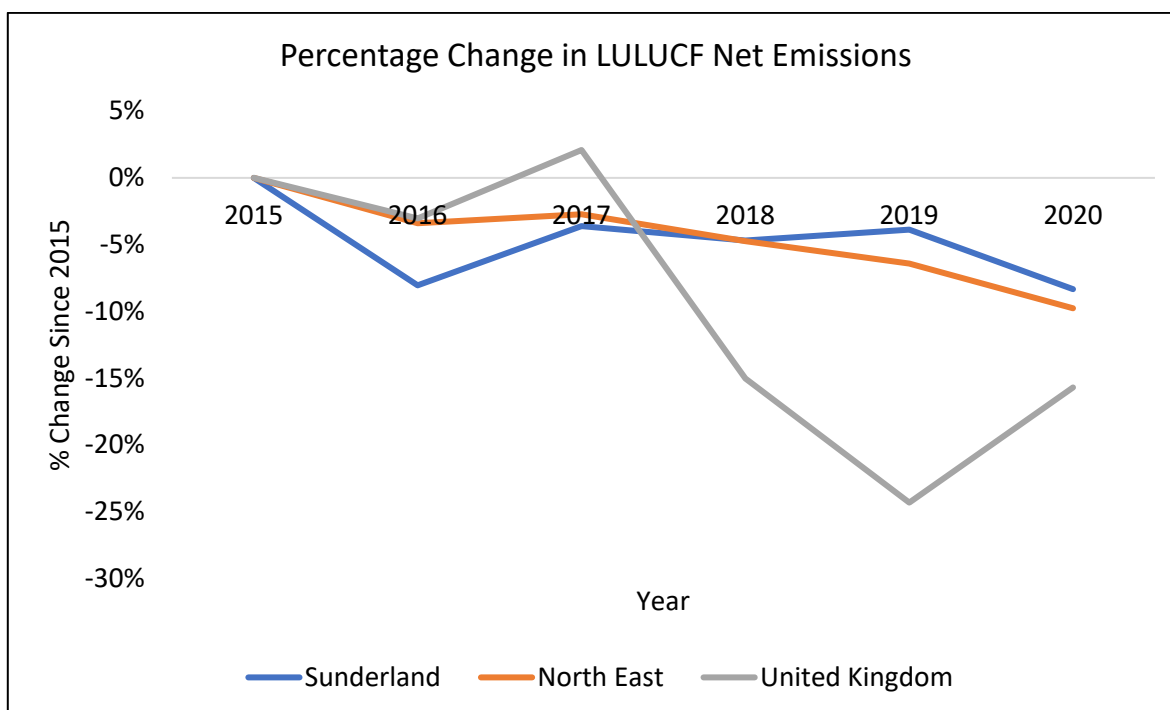


Figure 40 - Percentage change in LULUCF emissions between 2015 - 2020 in Sunderland, North East England and the UK

5.9. Government Dataset Changes

5.9.1. On an annual basis, BEIS release publicly available annual carbon emission data for local authorities. Up to and including 2019, BEIS released one singular dataset for local authorities, titled 'Local Authority territorial carbon dioxide (CO₂) emissions estimates'. This report, and the 2020/21 report, were based on citywide annual emission figures from this dataset.

5.9.2. As part of the 2020 data update, for the first time, BEIS have instead released a handful of datasets for local authorities. These include:

- Local Authority territorial greenhouse gas emissions estimates 2005-2020
- Local Authority territorial carbon dioxide (CO₂) emissions estimates 2005-2020
- Local Authority territorial methane (CH₄) emissions estimates 2005-2020
- Local Authority territorial nitrous oxide (N₂O) emissions estimates 2005-2020
- Local Authority territorial carbon dioxide (CO₂) emissions estimates within the scope of influence of Local Authorities 2005-2020 - Subset dataset (Excludes large industrial sites, railways, motorways and land-use)

- 5.9.3. Each of the individual datasets above published by BEIS also revise and update the relevant historic data, dating back to 2005. All of the above datasets will be closely monitored by the Council from this point.
- 5.9.4. The dataset entitled 'Local Authority territorial carbon dioxide (CO₂) emissions estimates within the scope of influence of Local Authorities 2005-2020' is more closely aligned to the interim recommended goals of the Tyndall Centre, to remain within a carbon budget of 8.2 million tonnes for the period 2020 – 2100, as a result of the method used to allocate carbon budgets. The Tyndall Centre uses a 'grandfathering' method to allocate global, national and sub-national carbon budgets and certain emission sources are considered outside of the influence of local authorities (diesel railways, agriculture and large industrial installations). The Council will consider these as part of the national carbon budget from 2020 onwards. The Tyndall Centre also recommends that net emissions from LULUCF are considered separately, which Sunderland will continue to do.
- 5.9.5. With effect from the 2022/23 Low Carbon Annual Report, which will include 2021 city-wide emissions data, the Council will use the CO₂ emissions estimates within the 'Local Authority territorial carbon dioxide (CO₂) emissions estimates within the scope of influence of Local Authorities' dataset instead of the 'Local Authority territorial carbon dioxide (CO₂) emissions'. As set out above, this will be able to be backdated to ensure a consistent approach from the city's baseline year of 2015 and is more closely aligned to the Tyndall Centre methodology.
- 5.9.6. In anticipation of the transition to the new dataset, historical data and the 2020 breakdown by sector has been considered for comparison purposes to the data presented in this report.
- 5.9.7. Figure 41 shows the annual citywide emissions set against the Tyndall Centre recommended targets for 2015 – 2020 using the new BEIS dataset. This new dataset shows that in 2020 Sunderland emitted a slightly lower figure of 1,037,486tCO₂ (instead of a net 1,039,057tCO₂ in the current data set used to date). On this basis, city-wide emissions remain within the five-year target level for 2015 to 2020.

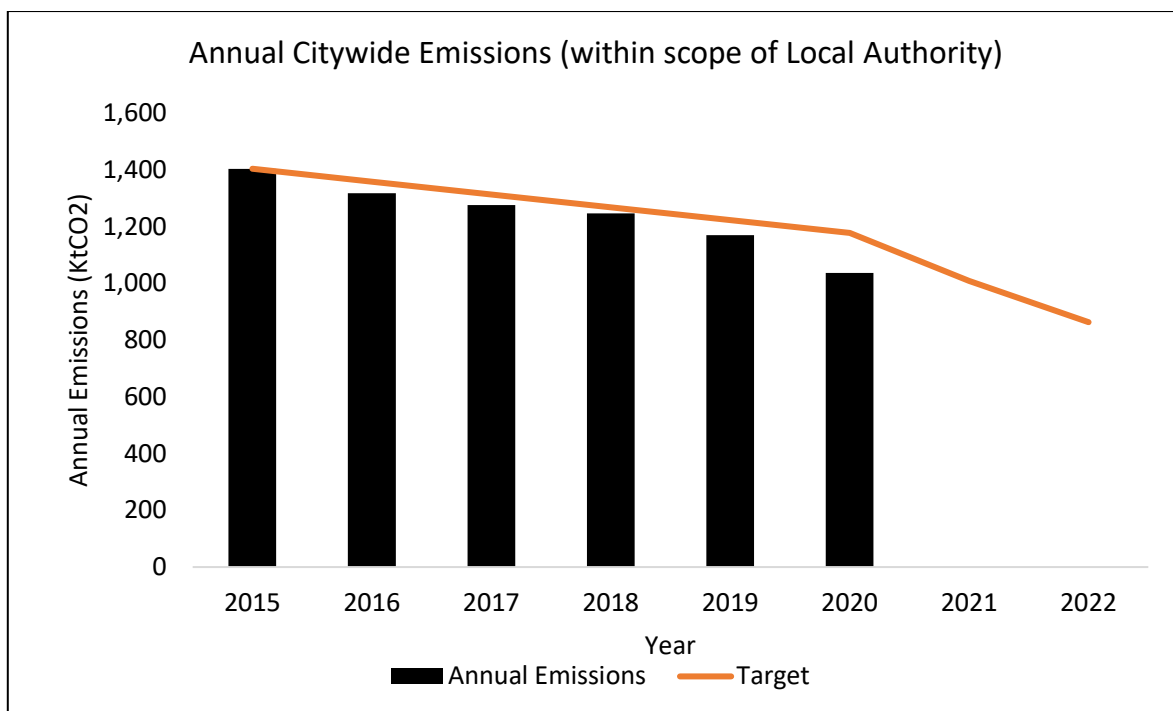


Figure 41 - Annual Citywide Emissions and Tyndall Centre recommended targets, 2015 – 2020

5.9.8. Figure 42 then shows the historic breakdown in citywide emissions since 2005 using backdated data from the new dataset issued by BEIS. Finally, figure 43 then shows the percentage breakdown in citywide emissions for 2020 using this new dataset, for comparison purposes. The share of the most carbon intensive sectors is very similar to the dataset from BEIS which has been used to date and which is set out in Figure 2 of this report. Using the new dataset, the share of emissions from domestic energy increases by 1% and the share from transport decreases by 1%.

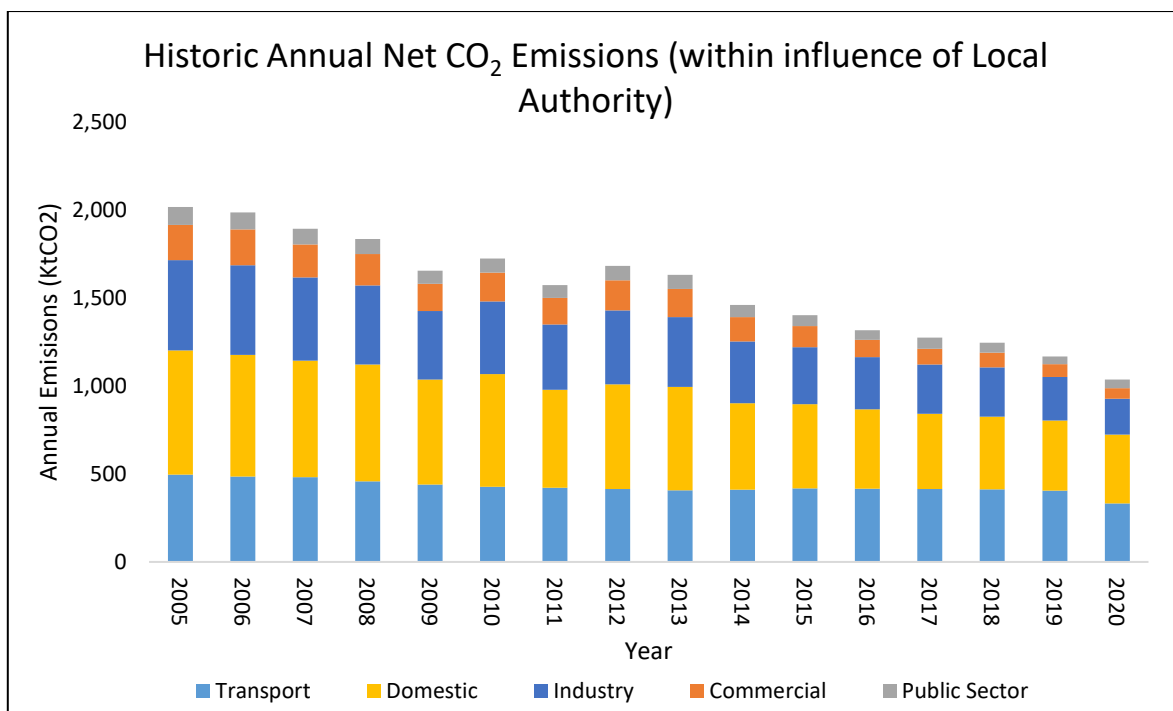


Figure 42 - Historic annual citywide emissions within the influence of the Local Authority

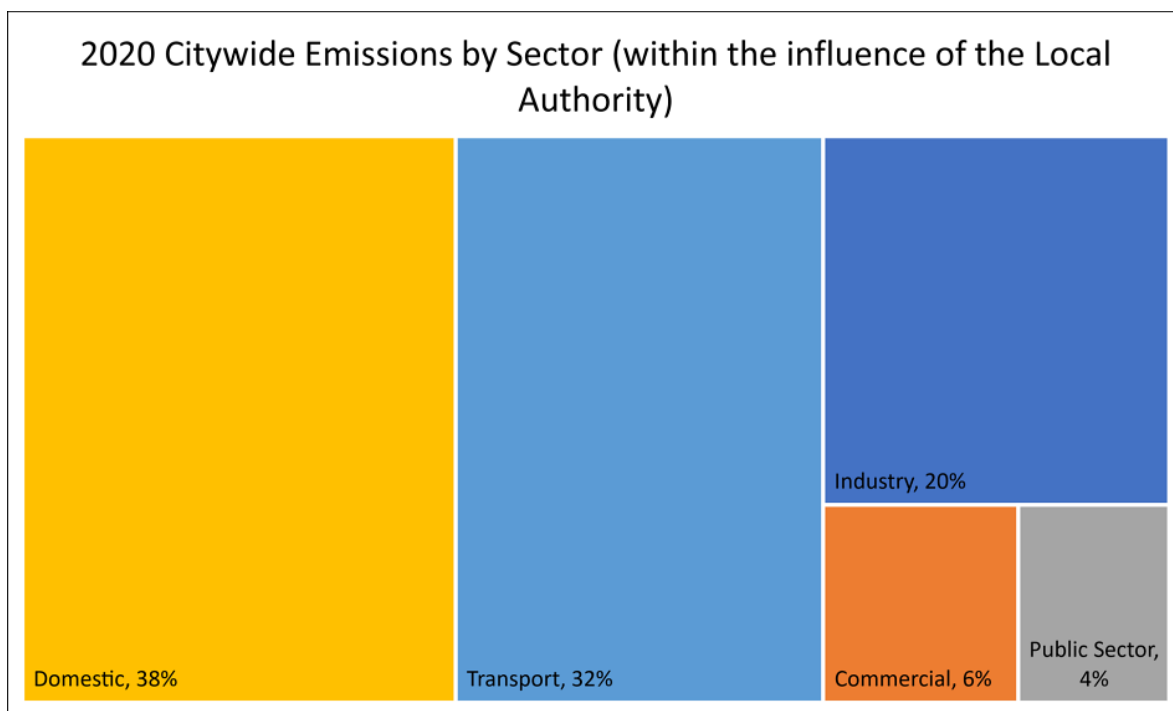


Figure 43 - 2020 citywide emissions by sector (within the influence of the Local Authority)

5.9.9. As set out in 5.9.5, reports in future years will be prepared based on the new dataset published by BEIS, building on the baseline set out in 5.9.7 and 5.9.8 above.

6. Key Areas of Activity and Progress

6.0 Introduction

A range of activity has been progressed under the Low Carbon Framework and City Council Action Plan to date. A summary of key areas taken forward by the Council is set out in 6.1 to 6.7 below in relation to each of the seven strategic priorities. Activity will increasingly be informed by the data set out within this annual report, together with feedback from external reporting, to maximise the reduction in emissions and the rate at which these can be achieved.

6.1. Our Behaviour

6.1.1. Activity in this area includes engagement work across a range of target groups set out in 6.1.2 below, with a strong focus on children and young people, together with opportunities to learn from and share good practice and communications activity.

6.1.2. An engagement plan has been drafted as a dynamic working document to shape this activity. It identifies a series of key target groups: residents; children and young people; voluntary community sector; employees; partners; and businesses. The plan outlines the proposed ways to engage with each group to involve them in decision making and support them in taking action to limit climate change. All strands aim to:

- a) understand the awareness of climate change among the target group and their feelings about Sunderland's response to it;
- b) actively listen to and engage target groups in co-creating solutions and participating in decision-making processes on climate action;
- c) share reliable information through diverse and accessible formats on the climate crisis and its likely future impacts, and on the local context and response;
- d) support individuals and organisations to make informed decisions and understand the carbon impact of these, including through sharing best practice and case studies;
- e) signpost target groups to support from the Council and other local, regional, national and international organisations on how to live and work more sustainably; and
- f) facilitate connections between target groups and others in the city working on these topics.

6.1.3. Significant work has been undertaken to maximise Low Carbon engagement with young people. Last year, the Environmental, Green and Sustainable (EGS) young people's group was established. EGS is open to young people from primary, SEND, and secondary schools alongside representatives from Sunderland Youth Council, young people's minority groups, Sunderland

College, and the University of Sunderland to provide a forum where young people's voice is heard. Members shape the agenda and have identified topics of focus such as food (looking particularly at local food and community growing); green spaces and biodiversity; and sustainable transport. Young representatives are supported to discuss and feed into the city's plans - representatives of EGSs attend the 2030 Shadow Board on a rotational basis and feed actively into discussions. The first EGS meeting was held in October 2021 and to date EGS have: named their group (previously referred to as the Young People's Advisory Group), chosen a social media hashtag for sustainable activities in the city to be used by all partners (#Wearsustainable); been consulted on a transport app in development. They have taken part in practical activities such as a visit to local garden 'A Space to Grow', and reviewed the MySunderland low carbon website development (covered more fully further in this section).

- 6.1.4. In partnership with German twin town Essen, building on cooperation to date with young people, the Council secured funding from North Rhine Westphalia and Stadt Essen to deliver the Citizens' Low Carbon Innovation for Mutual Action in Twin Cities (CLIMATE) project. This brought together groups of young people from Sunderland College (students in Travel and Tourism as well as Green Ambassadors) to work with counterparts in Theodore Heuss Gymnasium. Initial work was delivered virtually, including joint online sessions of both groups of learners, a webinar and joint project work. The project culminated in June 2022 in a visit by the Sunderland group, travelling sustainably overland to reach Germany, where they then spent time working with the Essen group of young people. Their visit included meeting with the European Green Capital Agency, a reception at the Town Hall of Essen, visiting the THG school, exploring local sustainable sites in Essen including an energy exhibition, and joint student-led projects.
- 6.1.5. The Sunderland 60 Legacy programme, focused on 18-25 year olds, was delivered in June 2022 by Common Purpose, a non-profit organisation which delivers leadership programmes in over 200 cities globally. Sunderland Legacy brought together young people from a range of employers and education providers across the city as part of an international leadership programme to work on how to make Sunderland a cleaner, greener city for generations to come. Young people from organisations including the Council, Sunderland Care & Support, Gentoo, Sunderland College, the University of Sunderland, Sunderland City Council took part alongside young people working in the private sector. Partners sponsored the programme, alongside businesses Arctic Wolf and Ashmore Consultants. Over four days the participants received training and sessions from Common Purpose as well as taking part in discussions with experts in related fields locally. They were then given the opportunity to present their own ideas to senior representatives on how they would recommend reducing carbon footprints and helping the city achieve its low carbon ambitions – these resulted in 6 proposals for

Sunderland. Two of the young people attended the city's next 2030 Shadow Board to share their experience and the proposed ideas they had developed, and the cohort met for further discussions to help take forward the proposals during September 2022.

- 6.1.6. In autumn 2021 Sunderland City Council launched a small COP26 grant programme for schools to encourage young people to design and get involved in a project that helps tackle climate change. A total of £2,600 was awarded across 6 Secondary Schools and 2 Primary Schools to design and deliver a range of cross-cutting initiatives, from planting trees to creating orchards, reducing single-use plastics and harvesting willow.
- 6.1.7. A new category has been introduced into the city's longstanding Young Achievers Programme during 2022 focused on the environment. A wide range of nominations were received for young people, both individually and collectively, who are making a real contribution to tackling climate change and engaging in wider sustainability activity. This was sponsored by Envision AESC who announced major investment in the city's green economy in July 2021 with construction of a Gigafactory which will increase the volume of batteries which they produce in the city for Electric Vehicles. The Awards event took place in September 2022 celebrating the achievements of young people of all ages in this area alongside a wide range of other award categories.
- 6.1.8. Representatives from University of Third Age (U3A) have also been involved in low carbon discussions in May 2022, with a particular focus on recycling, following wider discussions held on the International Day of Older People in October 2021.
- 6.1.9. More widely, as part of being shortlisted as a national finalist in the WWF One Planet City Challenge (discussed further in section 6.2), Sunderland is participating in the 2022 'We Love Cities' campaign. 'We Love Cities' is a public engagement campaign that allows people across the world to express support for sustainable urban development by voting for their favourite finalist from WWF's One Planet City Challenge and posting improvement suggestions for these cities. The central aim of the campaign is to:
- inspire and raise awareness for the sustainability progress being made in cities;
 - give the general public an opportunity to celebrate, vote and upgrade their city through making suggestions to decision makers;
 - reward communities and strengthen the bond between the public and decision makers.

A communications plan has been developed for this to be widely shared in a range of formats, with other activities sitting alongside this such as a young people's poster competition. Participation in the challenge will provide an

opportunity to receive feedback on successes to date and areas for improvement as well as encouraging people to vote. The Council is working with a range of partners to ensure maximum engagement with the We Love Cities campaign, including the Environmental, Green Sustainable (EGS) youth forum who discussed it at their June 2022 meeting and will share with their nominating schools, college, University and youth groups. The campaign has also been presented at the citywide 2030 Shadow Board where partners from all sectors committed to supporting its rollout.

- 6.1.10. Ecofest Sunderland was held for the first time in October 2022, developed in partnership with Climate Action North and the city's Business Improvement District. BID Sunderland. A range of partners came together to raise awareness of low carbon and wider sustainability programmes and initiatives across the city at Sunderland Museum & Winter Gardens - ranging from community growing to active travel, eScooters and energy efficiency with the opportunity for residents to make pledges and get involved with the We Love Cities campaign. There was also a wide range of activities for children to take part in at the Museum on the day including making posters, planting seeds, and taking part in an Ecofest trail. Climate Action North led on a mini-market at the Bridges which took place over two days, bringing a series of traders with sustainable goods to the city for the first time.
- 6.1.11. In addition, Sunderland was selected out of over 100 applicants to be one of 11 cities to take part in a European Covenant of Mayors peer learning programme. In October 2021, Sunderland hosted an online 4-day event with Vitoria Gasteiz from Spain and Parma in Italy to share learning and expertise. Topics discussed included transport, energy and green infrastructure, and Sunderland – as the designated expert city - led discussions on community and partner engagement, which culminated in our European partners participating in October 2021's city-wide 2030 Low Carbon Shadow Board's meeting.
- 6.1.12. Communications also has a key role to play within the 'Our Behaviour' strand. In 2021, the Council established the new [MySunderland website](#), which provides a citywide platform to enable partners to share information, promote activities, and publish Low Carbon data in one place. The new website is interactive and provides access to partner information, regular reports produced in relation to Low Carbon including a wide range of news and case studies, information on how to get involved, information regarding the science of climate change, an events calendar to support awareness raising and engagement activity, as well as access to data (including quarterly emissions reports, annual data reports, and the city's annual CDP submission). A monthly social media programme has been developed to ensure regular content is shared together with opportunities for engagement, in addition to internal communications activity to engage with employees.

6.2. Our Policies and Operational Practices

- 6.2.1. Activity in this area seeks to ensure carbon reduction is increasingly built into all Council policies and operational practices. Initial work set out more fully below has focused on: ensuring the Council's targets remain ambitious; building datasets to enable accurate reporting through this annual report and more broadly, as well as to help prioritise areas for delivery, and enable evidence-based external funding applications together with the associated monitoring and reporting; early development work in relation to procurement and mechanisms to help embed low carbon across the organisation. Significant work has also been undertaken in relation to green infrastructure.
- 6.2.2. The Council has continued to strengthen its collective commitment and ambition to climate change mitigation and adaptation, through signing the revised UK100 pledge, in addition to becoming a signatory of the Race to Zero and Race to Resilience campaigns at the time of the COP26 meeting held in Glasgow.
- 6.2.3. Initial work has taken place to consider how low carbon can be built in to the new Integrated Assessment Tool developed to assess a number of cross-cutting areas in Council decision making and programme development. Discussions have also begun to establish the most appropriate means for low carbon considerations to be built into procurement and will be progressed including regionally.
- 6.2.4. The Council's Deputy Leader (and portfolio holder for Low Carbon) has been accepted to join the UK100's Climate Leadership Academy for councillors. The Academy, which is taking place between September and November 2022, offers a unique opportunity to develop skills, knowledge and confidence in relation to climate change in order to become leading climate pioneers in local government.
- 6.2.5. As set out in section 3 of this report, the Council disclosed to CDP (formerly Carbon Disclosure Project) for the first time in 2021. CDP is a non-for-profit charity that runs the global disclosure system for investors, companies, cities, states and regions to manage their environmental impact and works closely with the Government's Department for Business, Energy and Industrial Strategy (BEIS). The world's economy looks to CDP as the gold standard for environmental reporting with the richest and most comprehensive dataset on corporate and city action. As set out in Section 3, out of over 1,000 cities reporting to CDP in 2021, Sunderland was 1 of 95 (and 1 of 11 in the UK) to receive a grade 'A'. This grade recognises the city as a leader in climate action. Sunderland City Council will continue to publicly disclose data and information on behalf of the city with relation to climate change mitigation and adaptation, including international activities on Low Carbon in which

Sunderland is involved, on an annual basis. The Council submitted its second disclosure to CDP in July 2022 and is awaiting the result and feedback.

- 6.2.6. Aligned with the CDP submission, Sunderland joined hundreds of other cities in the WWF (World Wildlife Fund) One Planet City Challenge. Through the challenge, the WWF assessed Sunderland's vision and actions towards climate change mitigation and adaptation against the goals of the Paris Agreement to determine whether Sunderland is making its fair contribution to help to limit global warming to 1.5°C. The Council received a strategic feedback report which analyses the city's strengths and areas to prioritise for the future. The report shows that, compared to other cities, Sunderland performs well in vision and impact. It also shows that political commitment and adaptation actions are strengths, whereas mitigation actions and adaptation targets are areas to prioritise and focus on in the future. Participating in this challenge also created the opportunity for Sunderland to be selected for the We Love Cities campaign.
- 6.2.7. Together with partners (the Woodland Trust, the Forestry Commission as well as the other 6 North Eastern Local Authorities), the Council submitted a successful bid to England Community Forests and DEFRA to form the North East Community Forest (NECF) Partnership. The NECF partnership will plant 500 hectares by 2025 and will assist with tackling three global challenges: climate change, biodiversity and the physical and mental health impacts of COVID-19. In addition to protecting and enhancing the city's existing tree stock, the NECF can: reduce the risk of flooding, create new habitat for wildlife, improve air quality, provide positive impacts on human health and wellbeing, boost the economy, provide new jobs, provide timber for sustainable building and energy production, and store thousands of tonnes of carbon. Additionally, the project will engage, work with and be supported by the wider community, which will include, but not be limited to: NGOs, professional bodies and local partnerships, national infrastructure providers, businesses, community groups, the education and environment sector, private and public landowners, local environmental charities, the health sector, communities and individuals.

During the first planting season for the NECF, Sunderland planted 15,830 tree and shrub plants across a 7.37-hectare land area. Across this full area, wildflower grasses were also sown. The NECF has also provided external funding for two new orchards in the city - planted at Hetton Park and Silksworth Welfare Park. These are both community orchards, which will help local residents access healthier food in their respective localities - as well as reducing the carbon footprint of a small part of the city's food consumption. Plans for the second planting season are underway.

- 6.2.8. Further tree planting schemes on a local level are also being progressed, such as the Local Authority Treescapes Fund (LATF), which has planted 844

trees in central Sunderland across two hectares of land. Planting funding comprises of DEFRA Trees for Climate and Local Authority Treescaping Fund, together with funding from the Trees for Cities charity, City Council and a donation from the Woodland Trust. The total funding amounted to approximately £208,000 for the 2021/22 planting season.

- 6.2.9. 'Healing Nature', the £250,000 Green Recovery Challenge Fund project was completed in March 2022. Public events were attended by more than 800 people, and over 500 children from 29 schools engaged with nature through the project. Ten wildlife sites were improved in Sunderland with works including scrub removal, pond and wet grassland restoration and access improvements.
- 6.2.10. National Lottery Heritage Funding of £149,462 was secured to support the Development Phase for a new project called 'Link Together'. The Council's Coalfield Area Committee has also provided £20,000 match funding towards the development phase of the project that ultimately aims to restore nature in 13 green spaces across Sunderland's Coalfield area. If successful in securing Delivery Phase funding, the project will work closely with local residents, as well as the Sunderland GP Alliance and Wear Rivers Trust, and provide opportunities to deliver schemes through volunteering and social prescribing that will also support individual physical and mental well-being.
- 6.2.11. The Council has mapped existing green spaces across Sunderland and identified areas with less greenspace. This will help to ensure citywide equity and inclusivity when planning nature-based solutions for climate adaptation.
- 6.2.12. In addition to tree planting, the Council has continued to progress work on the detail of its monitoring and reporting. This links to the Council's Tree Management Plan.

6.3. An Energy Efficient Built Environment

- 6.3.1. Activity in this area focuses on the domestic and commercial built environment, both existing and new properties. As set out in Sections 4 and 5 of this report, emissions within the Council's buildings and domestic energy within the city as a whole are key areas where emissions reductions are required. The Council has a both direct delivery role in this area as well as an enabling role, and external funding programmes are currently key to enabling progress as in a number of areas.
- 6.3.2. Funding was secured by the Council for the delivery of the Local Authority Delivery 2 project (LAD2). The total funding allocation is £1.7 million, with circa £1.6 million allocated for capital works. The City Council is currently delivering the retrofit of up to 270 properties with 495 total measures to

improve energy efficiency and reduce carbon emissions. The eligible interventions are external walls, double glazing, heat pumps, cavity walls, room in roof, loft insulation, solar and other. The LAD scheme aims to raise the energy efficiency of low-income and low EPC rated homes including those living in the worst quality off-grid gas homes, delivering progress towards reducing fuel poverty, phasing out the installation of high carbon fossil fuel heating and working towards the UK's 2050 net zero commitment.

- 6.3.3. Through the Social Housing Decarbonisation Fund (SHDF), Sunderland City Council is working with housing providers in the city to decarbonise domestic energy in social homes. In partnership with Gentoo, Sunderland City Council led a successful £1.2m bid towards a £2.7m project as part of SHDF Wave 1, to improve the EPC rating of up to 604 social homes. Delivery is currently underway with detailed retrofit assessments being carried out.
- 6.3.4. The City Council secured funding in Spring 2022 to install domestic low carbon / fuel poverty measures through the Warm Homes Fund (WHF). The project is split into two lots – one focused on installations, and the second focused on advice and guidance. WHF Lot 1 aims to fit up to 135 all-electric air source heat pumps in low efficiency / low-income properties that currently have old inefficient electric storage heaters. As part of the process a whole-house, fabric-first approach is adopted meaning WHF qualifying properties will be suitably insulated from other funding streams (such as ECO4) to enable installation of the heat pump. WHF Lot 2 aims to deliver complementary energy efficiency advice and support to properties, bringing together local organisations (Groundwork North East and Citizens Advice Bureau as community partners) to provide energy efficiency advice, debt advice and information on health related programmes. The project was launched in August 2022. Guidance in relation to ECO4 and the Boiler Upgrade Scheme will influence how the project is taken forward.
- 6.3.5. Between January 2021 and April 2022, the Council assisted 357 properties with heating and insulation measures and has attracted nearly £737,000 of utility funding to support energy efficiency improvements to homes across the city, through the ECO3 and ECO-Flex schemes.
- 6.3.6. After a successful £2.2m bid to the Public Sector Decarbonisation Scheme (PSDS), the Council completed works to decarbonise 8 municipal buildings through PSDS Wave 1 in summer 2022. The Council also submitted a targeted bid to PSDS Wave 3 seeking £792,500 grant support towards £873,473 total project costs to replace old gas boilers and install low carbon heating systems and fabric measures at two community sites in the city – Thorney Close Action and Enterprise Centre, and the Rainbow Family Centre in Washington. The outcome of the bid is pending at the time of writing.

- 6.3.7. Over the last 5 years, the Council has replaced over 48,000 streetlights across the city with LED lighting. From the start of the project until now, this has reduced annual energy consumption from streetlighting by over 20,000MWh, and generated annual carbon savings of 5,370 tonnes. In addition to the street lighting replacement scheme, the Council is now delivering LED lighting to parks and associated buildings, Traffic Signals and Lit Signs, which will deliver additional savings. It is expected that the project will be finished later in 2022.
- 6.3.8. Working with the Digital Catapult, the Council took part in an Innovation Challenge to develop and pilot a digital product or service which can improve energy efficiency within Council buildings. This initiative brought together the two key cross-cutting areas within the City Plan - Low Carbon and Smart City. The proposal began with two test sites and the solution was required to be scalable. The challenge was launched in summer 2021. Nomad Energy Solutions Ltd were the successful SME and began their pilot on the Evolve and Leechmere Centres operated by the City Council. The trial provided short-, medium- and long-term suggestions for improvements in the form of a report, and both buildings are experiencing reductions in carbon emissions. Opportunities to build on this and reduce emissions more widely in the Council's operational estate are currently being considered, recognising the significance that building emissions represent within the Council's overall carbon footprint.
- 6.3.9. Low carbon is a priority in new commercial capital investment including PV installation at Hillthorn to support operating power requirements for future occupiers.
- 6.3.10. The Council is working closely with Sunderland College (Education Partnership North East), MOBIE (Ministry of Building Innovation and Education) and local industry partners to develop the Housing Innovation and Construction Skills Academy (HICSA). Located at Riverside Sunderland, HICSA will lead the way with education and training, research and development, and innovation in Modern Methods of Construction (MMC), low carbon technology and retro-fit solutions. It will help to promote careers within the construction industry, create employment opportunities for local people, prevent talent drift, and ensure the skills of the region meet the future needs of industry. The Council has been awarded funding through Round 1 of the Government's Levelling-up Fund to support the development of HICSA, which will support the goal of Sunderland becoming carbon neutral as a city by 2040, training local people to deliver decarbonisation programmes for the city's existing homes and neighbourhoods that will improve energy efficiency, reduce carbon footprint and keep residents warm in winter months. HICSA is designed to be a carbon neutral building with passive, low carbon design and renewable energy solutions which are aligned with the operational principles of the facility.

6.3.11. The Council is working with Homes England, the Offsite Alliance, and other industry partners to prepare a business case for a regional low carbon offsite advanced manufacturing hub (OAMH) that will support the manufacture of high quality new homes and feed the City's housing development programme. The OAMH would support the growth of the local offsite supply chain and promote collaboration across industry to embrace alternative methods of housing construction that address current market challenges relating to shortages of labour and materials, accelerate build programmes, increase quality, and embed carbon reduction within the manufacturing process.

6.3.12. The Council's residential development programme will see the delivery of approximately 7,000 new across the City over the next 10 years. The Council is working with investors, developers and registered providers to promote the delivery of low carbon housing solutions and address the increased cost of living challenges. Vaux Housing is the Council's flagship residential development that promotes low carbon and renewable energy solutions and supports a new way of city centre living. The 132 homes at Vaux will be constructed using modern methods of construction, 111 will be built to 2025 Future Homes standard (75% carbon reduction against 2013 Building Regulations) and 21 will be built to Passivhaus standards. All townhouses and maisonettes will be built to EPC A and all apartments to EPC B. Key carbon reduction features include passive and fabric first design principles, high levels of insulation, air source heat pumps, photovoltaics, battery storage, LV charging points, and provision for future connection to a city centre heat network. The scheme is supported by £6m of Levelling Up Fund investment and a further £2m of ERDF funding is facilitating the delivery of the Vaux Smart Energy Network.

6.3.13. The Council is currently developing the programme for Expo Sunderland which will showcase the city's strategic approach to residential development and carbon reduction, and engage local residents and businesses, regional and national policy makers in Sunderland's smart city and low carbon ambitions.

6.4. Renewable Energy Generation and Storage

6.4.1. Activity in this area includes work in relation to the Council's operational estate, feasibility exercises in relation to mine-water heating, district heating systems, heat zone development, as well as energy generation to facilitate economic development.

6.4.2. The City Council was allocated £2.2 million for solar PV and battery storage works – through the Sunderland Energy Storage and Efficiency Project

(SESEP) which is part-funded through the European Regional development Fund (ERDF) – across a range of Council operational premises. Through SESEP, the Council is installing solar and battery storage at its business centres (Evolve, Sunderland Software Centre and Washington Business Centre) as well as at Jack Crawford House and Transit Shed 7 at the Port of Sunderland.

- 6.4.3. Design work has also been completed for solar PV at St Mary's, Farringdon Row, Bunny Hill and Holmeside car parks. Combined, it is expected that these will provide approximately 3 to 4 MW of renewable energy.
- 6.4.4. The Council is exploring the ability to utilise renewable energy in the form of minewater in the city centre, as well as district heating opportunities citywide. A high-level feasibility review of mine workings beneath the city centre, identifying the overlay of heat demand, potential abstraction points and envisaged temperatures has been completed. An outline business case has been prepared for this project and stakeholder engagement is ongoing. Green Heat Network – Transition Scheme Funding has been secured and borehole market engagement has also recently been completed. It is envisaged that pilot boreholes will be sunk later in 2022
- 6.4.5. Sunderland is one of 28 pilot cities assisting the BEIS with their methodology for Heat Network Zoning. To progress citywide district heating opportunities, in autumn 2021 the Department for Business, Energy and Industrial Strategy (BEIS) consulted on proposals for the implementation of Heat Network Zones in the England. The overall aim of this is to develop heat networks in zones where they can provide the lowest cost low carbon heat to the end-consumer in England through a combination of regulation, mandating powers, and market support.
- 6.4.6. Work is also progressing at the International Advanced Manufacturing Park (IAMP) to deliver a 100% renewable electricity 'Microgrid' that it is anticipated will save 55,000 tonnes of carbon annually, working closely with industry partners. This will enable more cost competitive energy delivery, coupled with renewable energy to be generated on a phased basis, to meet the energy requirements of companies locating at IAMP. The microgrid development represents a significant opportunity for private sector investment, including in renewable energy, to create an environment whereby electric vehicles are being manufactured at scale from green energy.

6.5. Low Carbon and Active Transport

- 6.5.1. The Council has continued to promote active travel initiatives both to its employees and as part of wider travel planning with businesses and partners. 702 people have signed up to the BetterPoints App scheme, 243

people on the Love to Ride Scheme and the sustainable travel team have delivered 10 mixed cycling training sessions (56 adults and 30 children attended) and 10 Dr Bike Sessions at various locations for public and businesses as well as Balance Bike Training within 16 schools across the city. A total of 616 children have been trained. Since January 2021 the Council has provided cycling proficiency training to over 3,000 pupils in schools throughout the city. Funding has also been secured to support business, organisations & community groups to install cycling parking and 35 organisations have benefitted as of end of 30th September 2022.

6.5.2. The City Council facilitates a Cycle to Work Scheme with 57 completed orders to the value of £60,115.59, which will offset 7,877KG of Carbon.

6.5.3. A mobility hub has begun to be established, initially aiming to bring about reduced emissions and increase low carbon and active travel among the council's workforce. With 10 Nissan Leafs having arrived in March 2022 and now made available to staff adjacent to City Hall, the mobility hub is now operational for employees with 191 approved users and over 330 trips having been made by the Nissan Leaf fleet so far. It is expected that in the future the hub will also be of particular benefit to the 10,000 people who will eventually work from Riverside Sunderland, as well as the 2,500 residents who will live in the area when the site is fully developed. Linking with the solar energy project for St Mary's Multi Storey Car Park (where the vehicles are located) will create an opportunity for the Electric Vehicle miles to be powered by renewable electricity.

6.5.4. An e-scooter trial began on 31st March 2021 with e-scooters deployed across the city within a controlled geofenced zone. 41% of journeys made via an e-scooter since the start of the trial have replaced car journeys and collectively the trial has saved 12 tonnes of carbon. As at August 2022, over 124,000 journeys have been made with more than 250,000km covered and a total of 25,000 hours travelled. The Council recently secured an extension of the e-scooter trial area to include the integration of Sunderland Strategic Transport Corridor phase 3 (SSTC 3), and the surrounding areas, which will allow for improved connectivity between employment, residential and retail zones as part of the extended trial.

6.5.5. In addition to the Digital Catapult programme project focused on emissions from Council buildings, the Council has collaborated with Nebula Labs to develop a proof of concept app to automate collection of travel data, by tracking journeys and automatically working out the mode of transport taken by employees. During the pilot, the app gathered 700 data points and identified journeys correctly to between 80% and 96% accuracy. Consideration is currently being given to the best way to take this forward, including interlinkages with the Better Points app which is also being trialled.

The focus is to encourage more people to use active and low carbon means of transport.

- 6.5.6. Following a successful bid in January 2022, the Council and was selected to participate in the Local Climate Engagement (LCE) project. The programme is a partnership between Involve, UK100, Democratic Society, Shared Future and Climate Outreach and works with local authorities to deliver public engagement projects in relation to tackling climate change. Sunderland's project is focusing on public engagement around travel behaviours, and is designed to increase public engagement as we bring forward schemes within the Local Cycling and Walking Infrastructure Plan (LCWIP) as well as to work with Together for Children to seek to reduce carbon emissions from home to school transport. A series of six training sessions are currently being delivered to a range of staff, and the project will run until March 2023. Learning from the project will influence how future engagement work in relation to low carbon is taken forward.
- 6.5.7. A 'School Streets' trial scheme has been developed, with streets temporarily closed to tackle problem parking. A trial street closure is being operated at St Bede's Catholic Primary School Washington to address road safety concerns and improve air quality. Sunderland will also explore opportunities to extend the School Streets approach following assessment of pilot.
- 6.5.8. To increase charging for Electric Vehicles, the Council has been awarded £69,300 from the OZEV On Street Residential Charging Scheme to support on-street residential parking at 4 locations in the city. An Electric Vehicle Strategy is also being developed. This will involve identifying strategic gaps in citywide EV charging infrastructure, initially focusing on provision available to residents, and setting out a roadmap to meet the needs identified.
- 6.5.9. Development is underway for a new pedestrian and cycle bridge at Riverside Sunderland. This will encourage active transport and increase connectivity across Riverside Sunderland and into the city centre.
- 6.5.10. Sunderland secured £1.125 million from the Department for Transport Active Travel Fund to support the ongoing development of local active travel. The fund supports the installation of temporary projects for COVID-19 recovery as well as longer-term projects.
- 6.5.11. Work is also underway on the development of a 'Social Prescribing Pilot' project, with the Council having received funding from the Department for Transport to develop a proposal. Focusing on the Redhill and Southwick wards in the first instance, the pilot project seeks to improve people's health through increased levels of physical activity and active travel and provide clear links between infrastructure development and the social prescribing schemes.

- 6.5.12. The North East's first Bus Service Improvement Plan (BSIP) was published by the North East Joint Transport Committee in October 2021. The ambitious plan aims to return bus ridership – currently 25% lower than before the pandemic – to pre-Covid levels by the end of the next financial year and to grow by 10% each year thereafter. The range of measures proposed include improvements to timetables and fares, priority measures on roads and at junctions to speed buses up including two new Park & Ride sites, a set of affordable fare “caps” that work across all buses and Metro services, lower fares for many young people, and simplified and improved information.
- 6.5.13. More broadly, the Draft North East Rail and Metro Strategy which was agreed by the North East Joint Transport Committee in June 2022 builds on the North East Transport Plan and outlines the future for rail and Metro in the North East region. To help achieve the North East Transport Plan's commitment for carbon neutral transport, the North East Rail and Metro Strategy seeks to increase patronage, increase the share of goods transported by rail, introduce new more efficient trains and improve stations and depots.
- 6.5.14. Within Sunderland, the Local Cycling and Walking Infrastructure Plan (LCWIP), which was adopted by Cabinet in September 2022, provides a comprehensive framework to guide Sunderland City Council and its partners in relation to planned walking and cycling infrastructure over the next ten years. The plan will be used to support funding applications to enable delivery as well as in planning and design decisions regarding transport schemes and active travel more broadly.

6.6. A Green Economy

- 6.6.1. Activity in this area has focused on inward investment and supporting existing green economy businesses to grow, as well as on supporting the wider business community to become more environmentally sustainable.
- 6.6.2. There are a total of 7,750 jobs in 37 businesses engaged in the green sector in the city. [Note, this includes Nissan, on the basis that it is in the process of transforming its business model to 100% EV by 2030.
- 6.6.3. During 2021/22, 11 green sector projects in Sunderland have delivered a total of 1,950 jobs and £998 million of capital investment.
- 6.6.4. Sunderland has secured significant inward investment in its green economy. This includes the announcement in July 2021 with an £875m investment from both Nissan and Envision AESC in creating an EV Hub – bringing a new vehicle to Sunderland and creating a 35 GWh capacity Gigafactory to scale up battery manufacturing - as well as the decision by Saietta Electric Machines & Drives to locate in the city. In addition, successful local EV

battery company Hyperdrive Innovation has been acquired by Turntide as part of a £100 million deal and Haskel Energy Systems has tripled production of hydrogen power systems in the city. Other companies including AEM Group and Curtis Instruments have continued to grow strongly. The Council is also seeking to facilitate investment in innovation and production linked to electrification of advanced manufacturing, building on the city's key role in EV production and battery manufacturing.

- 6.6.5. Work has continued with Newcastle University who lead the Driving the Electric Revolution (DER) national programme as well as the DER North East Centre which is located in Sunderland, adjacent to Nissan and the International Advanced Manufacturing Park (IAMP). The Centre is one of four across the UK, which are part of a large-scale Government-backed programme run by a consortium led by Newcastle University. It is intended to facilitate projects in the field of Power Electronics, Machines & Drives and enable the UK to capture part of the significant global market opportunity in electrification, providing open access facilities, combining state-of-the-art equipment with expertise in innovation and production, and enabling activities such as prototyping and scale-up.
- 6.6.6. To support the wider business community, the Business Renewables Energy Efficiency Sunderland (BREEZ) project has provided energy efficiency support for Small and Medium-Sized Enterprises (SMEs). The overall objective of BREEZ is to reduce energy consumption and enable carbon reduction in a compliant and cost-effective way. BREEZ upgrades old, inefficient systems with new, energy-efficiency upgrades that have been approved and agreed prior to their installation. This is then followed by upgrading old, inefficient systems with new, energy-efficiency measures that have been recommended in the audit. Typically, BREEZ offers 50% grant funding towards microgeneration (e.g. Photovoltaics), Insulation, low-carbon heating upgrades and LED lighting. Grant support for upgrading business process equipment may also be available. As of summer 2022, 124 SMEs had been engaged to date (including audits, advice and guidance, grants). 19 grants have been claimed with an average value of £7,866.
- 6.6.7. In addition to the BREEZ project, Sunderland was also part of the Business Energy Saving Team (BEST) which ran until March 2022. BEST was a project funded by the European Regional Development Fund (ERDF) and delivered by local authorities in North East England. The BEST team provided businesses with a full energy audit, designed to help identify ways to save energy, money, and carbon emissions. If businesses met certain criteria the BEST team could also provide a grant to help cover costs. As of the end of BEST in March 2022, Sunderland City Council led the regional performance table, with 21 approvals, 14 grants claimed, and a total project value of £130,000 invested in energy efficiency improvements saving 327 tonnes of carbon equivalent.

6.7. Reducing Consumption and Waste

- 6.7.1. Activity in this area includes household recycling, waste collections, as well as initiatives to reduce consumption and improve access to local and sustainable food.
- 6.7.2. Together with neighbouring authorities South Tyneside and Gateshead, Sunderland is part of the South Tyne & Wear Waste Management Partnership (STWWMP), which published its Joint Municipal Waste Strategy 2021-2025 in 2021. As part of the Joint Municipal Waste Strategy, Sunderland City Council aims to increase household recycling rates to 55% by 2025, 60% by 2030 and 65% by 2035, in line with the European Commission 'Circular Economy Package'.
- 6.7.3. In February 2022, the new state-of-the-art Household Waste and Recycling Facility at Pallion opened, which is five times the size of the former Beach Street facility and is capable of handling more than 1 million visits annually as the Council seeks to encourage high levels of recycling across the city. The split-level design makes it easier for householders to use the waste containers, with no steps to climb, and operationally it is possible to change over the waste containers without having to temporarily close the site. The new facility is more efficient, with better facilities and opportunities to recycle and re-use more waste materials. This is designed to increase the amount of household waste recycled, reduce congestion and be more user friendly for residents. The site also includes a purpose-built recycling/re-use shop. Re-usable items such as furniture, working electrical items, clothing, bikes, toys, books, CDs, bric-a-brac and other household items can be donated directly to the re-use shop, where donations can then be sold on at low prices to be enjoyed by somebody else.
- 6.7.4. Sunderland City Council commenced a 24-month trial for the city's first electric Refuse Collection Vehicle (RCV) in June 2021 to help lower CO₂ emissions from the transportation of waste. The Dennis Eagle e-Collect has joined Sunderland City Council's EV fleet that will increasingly help to reduce carbon emissions, keep the air cleaner, and be more cost-effective. It is understood to be the first of its kind in the North East region. The Dennis will be collecting approximately 20 tonnes of waste daily and is expected to clock up 10,000 miles every year. As at the end of August 2022, the Dennis has collected 2,769 tonnes of waste and has clocked 4,267 miles. This is particularly important given the scale of challenge which decarbonising the Council's fleet represents.
- 6.7.5. To encourage re-use more widely, Refill Sunderland was launched on 16th June (to mark World Refill Day) to reduce single use plastic waste in the city. Refill is an award-winning behaviour change campaign led by Not-for-Profit

organisation 'City to Sea' to help people live with less waste by providing a platform to connect them and their communities to places they can eat, drink and shop without single-use plastic packaging. Worldwide over 350,000 people have downloaded the app. Refill Sunderland will support businesses and consumers locally to transition towards reuse systems and tackle of plastic pollution. 104 Refill stations were already registered within the city at launch and Refill Sunderland provides a platform for new stations to register and will help promote them.

- 6.7.6. To increase sustainability of school meals, the Council's school meals service worked towards and achieved the Green Kitchen Standard in July 2021. This national certification, developed by the Soil Association and Carbon Trust, recognises caterers that undertake best practice to sustainably manage energy, water and waste. Work is ongoing to further embed sustainability standards in catering provision through the Food for Life and Green Kitchen Standard programmes.
- 6.7.7. In addition, colleagues in teams across the Council (Public Health, Low Carbon, Change 4 Life, school catering) are working together on the design of a city-wide Food and Nutrition Charter mark. All schools and children's settings are eligible to apply for the Charter, with the Bronze level rolled out in 2021. This includes a significant focus on environmental sustainability including plant-based and planet-friendly diets, waste minimisation and seasonal eating. The first Sunderland school was accredited in 2022 and teams are now working to develop silver and gold levels, including with consultation and engagement from the young people's EGS group.

7.0. Conclusion

- 7.0.1. This report is the second annual carbon report since the city-wide Low Carbon Framework and the Council's Low Carbon Action Plan were published.
- 7.0.2. The report has set out that the Council's scope 1 and 2 carbon footprint during 2021/22 was 7,498tCO₂e, representing a 12.4% reduction from the previous year and a 58.5% reduction since 2017/18. The main source of emissions from Council operations in 2021/22 was the generation of purchased electricity for operational buildings. The generation of purchased electricity for streetlighting and gas consumption in buildings experienced the greatest reduction of emissions, with annual reductions of 16.3% and 19.1% respectively. The vehicle fleet experienced the lowest reduction, with emissions falling by 0.3%.
- 7.0.3. The Council continues to refine its scope 3 emission data, building on the annual data report for 2020/21. Based on current data availability, the Council's scope 3 emissions for the 2021/22 financial year are estimated to be 37,083.10tCO₂e (82% of overall emissions). The main sources of scope 3 emissions for the Council are purchased goods and services as well as energy consumption in scope 3 buildings (e.g., schools, SCAS, fire and leisure).
- 7.0.4. On a citywide level in 2020 (the latest year for which data is available) a net 1,039,057tCO₂ were emitted in Sunderland, representing an 11.5% decrease from 2019 levels. Against the science-based interim target set by the Tyndall Centre, city-wide emissions were reduced by 26.1% over the period from 2015-2020, which exceeded the target for a 16.1% reduction over this period. The net 1,039,057tCO₂ consists of 1,046,557tCO₂ emitted from the domestic, industrial, commercial, public, transport and agriculture sectors (decrease of 11.5% since 2019 and 26.1% since 2015 levels) and 7,499tCO₂ sequestered by the Land Use, Land Use Change and Forestry (LULUCF) sector (decrease of 4.6% since 2019 and 8.3% since 2015 – primarily due to an increase in emissions from cropland). The main causes of CO₂ emissions in Sunderland in 2020 were domestic energy (emitting 391,502 tonnes CO₂, mainly due to gas) and transport (emitting 340,188 tonnes CO₂, mainly due to roads).
- 7.0.5. Going forward, the Council will continue to report on its scope 1, 2 and 3 greenhouse gas emissions and citywide carbon emissions through an annual report. The council will also continue to report routinely scope 1 and 2 emission data on the MySunderland website.
- 7.0.6 A range of activity has been progressed since the Council's Action Plan was adopted in January 2021 as summarised in Section 6. Understanding of the data in relation to emissions is increasingly informing activity being taken forward, and has informed the revision and updating of the Council's Action Plan which was considered in July 2022 by Cabinet.

7.0.6. In future years, reporting in relation to low carbon will continue to be developed both in relation to the data itself and with further milestones and indicators to demonstrate progress in relation to the seven strategic priorities set out in the city's Low Carbon Framework and within the structure of the City Council's Low Carbon Action Plan following its revision in July 2022.

8.0. Glossary

BEIS	The Government Department for Business, Energy and Industrial Strategy.
Capital Goods	All upstream (i.e., cradle-to-gate) emissions from the production of capital goods purchased or acquired by the reporting company in the reporting year.
Carbon Budget	An amount of carbon dioxide that a country, company, or organisation has agreed is the largest it will produce over a particular time period.
Carbon Footprint	The amount of carbon dioxide released into the atmosphere as a result of the activities of a particular individual, organization, or community.
Carbon Intensity	The amount of carbon by weight emitted per unit of energy consumed.
Carbon Neutral	Making or resulting in no net release of carbon dioxide into the atmosphere.
Climate Emergency	A situation in which urgent action is required to reduce or halt climate change and avoid potentially irreversible environmental damage resulting from it.
Environmentally Extended Input Output	Environmentally extended input output (EEIO) models estimate energy use and/or GHG emissions resulting from the production and upstream supply chain activities of different sectors and products within an economy. The resulting EEIO emissions factors can be used to estimate GHG emissions for a given industry or product category. EEIO data are particularly useful in screening emission sources when prioritising data collection efforts. For this report, EEIO data was used to calculate emissions from purchased goods and services in the 2021/22 financial year.
Fugitive Emissions	Fugitive emissions from refrigeration and air conditioning result from leakage and service over the operational life of the equipment and from disposal at the end of the useful life of the equipment. The leakage of refrigerant gas is a small but significant source of GHG emissions because of a high Global Warming Potential associated with these GHGs.
Greenhouse Gas Protocol	Greenhouse Gas Protocol provides standards, guidance, tools and training for business and government to measure and manage climate-warming emissions.
Grey Fleet	A grey fleet vehicle is one owned and driven by an employee for business purposes. The employee is reimbursed on a pence per mile basis for using their private vehicle on business journeys. Vehicles used by employees under cash allowance schemes are considered grey fleet too.

Low Carbon Framework	The citywide Low Carbon Framework focuses activity around seven strategic priorities, putting people at its heart - changing our behaviours, changing our organisational policies and practices, and setting out five thematic areas under which work will be taken forward. These focus on the built environment, green economy, low carbon energy generation and storage, consumption and waste, and low carbon and active transport.
Low Carbon Action Plan	The Council's Low Carbon Action Plan sets out how the Council will seek to deliver strategic priorities of the Low Carbon Framework as an organisation. The Action Plan is structured around the same seven strategic priorities as the Low Carbon Framework. Individual partner organisations are each developing an Action Plan if they have not already done so
LULUCF	Land Use, Land Use Change and Forestry sector.
NE	Not estimated
Paris Agreement	The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at COP 21 in Paris, on 12 December 2015 and entered into force on 4 November 2016. Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels.
Scope 1	GHG emissions directly from operations that are owned or controlled by the reporting company.
Scope 2	Indirect GHG emissions from the generation of purchased or acquired electricity, steam, heating, or cooling consumed by the reporting company.
Scope 3	All indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions.
Sunderland Care and Support (SCAS)	Sunderland Care and Support are categorised as scope 3 because they have their own budget, meaning they are outside of the Council's direct financial control.
Together for Children (TfC)	Together for Children are categorised as scope 1 & 2 because they use the Council's budget, so are within the Council's direct financial control.
Tyndall Centre	The Tyndall Centre is a partnership of universities bringing together researchers from the social and natural sciences and engineering to develop sustainable responses to climate change. The Tyndall Centre work with leaders from the public and private sectors to promote informed decisions on mitigating and adapting to climate change.
Upstream Purchased Goods	All upstream (i.e., cradle-to-gate) emissions from the production of products purchased or acquired by the reporting company in the reporting year.

