Sunderland City Council

Sunderland City Council

Low Carbon – Annual Data Report 2022/23

November 2023

City of Sunderland Low Carbon

We're on a mission to reduce our emissions

Contents

LOW CARBON – ANNUAL DATA REPORT

APRIL 2022 TO MARCH 2023

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 set 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 third 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 2022/23 financial year (with updates to previously published data where appropriate for accuracy purposes), as well as citywide carbon (CO_2) emissions for Sunderland in the 2021 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 2022/23 was 7,866 tonnes of Carbon Dioxide equivalent (7,866 tCO_2e), representing a 9% reduction from the previous year and a 58% reduction since the 2017/18 baseline. The definitions of Scope 1, 2 and 3 emissions are set out in Section 4 of this report. The main source of emissions from Council operations in 2022/23 was liquid fuel used for the vehicle fleet. The generation of purchased electricity for the operational estate and streetlighting experienced the greatest reduction of emissions, with annual reductions of 18% and 17% respectively. Liquid fuels used for the vehicle fleet experienced the lowest reduction, with emissions falling by 0.3%.

0.5 The Council continues to refine its scope 3 emission data, building on the annual data report for 2021/22. Based on current data availability, the Council's scope 3 emissions for the 2022/23 financial year are estimated to be 43,630 tCO_2e (85% of overall emissions, increasing from 82% in 2021/22). The main sources of scope 3 emissions for the Council are purchased goods and

services, as well as leased assets – including emissions from operations for Sunderland Care and Support, fire stations and some vacant assets. Although a 2017/18 baseline comparison is not yet available for scope 3 emissions, work is ongoing in relation to the Council's scope 3 emissions inventory and datasets.

0.6 On a citywide level in 2021 (the latest year for which data is available) 1,089,312.77 tCO_2 were emitted in Sunderland within the influence of the local authority, representing an 6.5% increase from 2020 levels. It is important to note that emissions in 2020 and 2021 were significantly influenced by the COVID-19 pandemic. Emissions in 2021 were 6.2% lower than 2019 levels (the most recent year data is available where emissions were not impacted by the COVID-19 pandemic).

0.7 Aligned with the Tyndall Centre carbon budget, the Tyndall Centre provide recommended interim targets – including base year decarbonisation targets and interim 5-yearly carbon budget targets. The current recommended interim targets for Sunderland, aligned with a 14.4% annual reduction in citywide emissions and a carbon budget of 8.2 $MtCO_2$ between 2020 – 2100, are to reduce CO_2 emissions by 65.5% by 2025 based on 2015 levels and to stay within a carbon budget of 5.8 $MtCO_2$ between 2018 – 2022.

0.8 Sunderland met the first interim target for the city suggested by the Tyndall Centre for 2015-20 (of a 16.1% reduction in annual citywide emissions). However, the city is not currently on track to meet its second recommended interim decarbonisation target of a 61.5% reduction against a 2015 baseline by 2025 (which is aligned with a 14.4% annual reduction). If this is to be achieved by 2025, the city must reduce annual emissions rapidly over the forthcoming years. Sunderland is, however, on track to meet its first interim recommended 5-year carbon budget period target of 5.8 $MtCO_2$ between 2018 – 2022 (aligned with the city's carbon budget calculated by the Tyndall Centre of 8.2 $MtCO_2$ between 2020 – 2100). This is in part due to emissions reductions targets being exceeded in previous years.

0.9 The main causes of city-wide CO_2 emissions in Sunderland in 2021 were the domestic sector (emitting 404,399 tonnes CO_2, mainly due to domestic gas) and transport (emitting 311,863 tonnes CO_2, mainly due to road transport).

0.10 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 citywide targets for decarbonisation to maximise the reduction in emissions and the rate at which these can be achieved.

0.11 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.

1. Introduction

1.0.1. This report provides an overview of the Council's carbon footprint for the 2022/23 financial year as well as the citywide carbon footprint for Sunderland for the 2021 calendar year (the most recent year for which Government data is available). In addition, this report provides an overview of key work undertaken 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. Section 4 defines the Council's current organisational boundary and provides an overview of the Council's scope 1, 2 and 3 emissions 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 citywide emissions for 2021 (the most recent year data is available) and compares annual trends since the 2015 baseline, 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 2022/23. 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 2022/23 was 7,866 tCO_2e, representing a 9% reduction from the previous year 2021/22 and a 58% reduction from the 2017/18 baseline. Approximately 46% of the reduction in the 2022/23 financial year was due to the decarbonisation of National Grid supplied electricity, with the remainder due to lower energy consumption. The main source of emissions from Council operations in 2022/23 was the use of liquid fuels for the vehicle fleet.

1.1.2. The Council is also continuing to develop its scope 3 datasets, in line with recommendations from the Greenhouse Gas Protocol. Based on the current data available, scope 3 emissions for the Council are estimated to have accounted for 43,630 tCO_2e in 2022/23 (85% of the Council's overall emissions,

increasing from 82% in 2021/22). A baseline comparison for 2017/18 is not yet available for scope 3 emissions. Focus on scope 3 emission sources (our indirect emissions) will continue to increase as we move forward, to bring our value chain with us on our Low Carbon journey and achieve an increasingly robust monitoring process. As part of this, a baseline comparison for 2017/18 is expected to be included in the next annual report).

1.1.3. Sunderland City Council's full greenhouse gas inventory is set out in Table 1 on the next page.

Table 1 - Sunderland City Council's Greenhouse Gas Emissions Inventory, 2022/23

		Annual Emissions (tCO_2e)[1]							
Scope	**Source**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**Trend from previous year**	**Trend from base year**
Scope 1	Gaseous fuels	2092.03	2299.56	2408.74	2399.79	2000.29	1967.15	↘ 2%	↘ 6%
	Liquid fuels (fleet)[2]	2309.60	2702.83	2358.79	2376.89	2424.21	2388.97	↘ 2%	↗ 3%
	Total scope 1	**4401.63**	**4995.39**	**4767.53**	**4776.68**	**4424.50**	**4356.12**	↘ 2%	↘ 1%
Scope 2	Purchased electricity (buildings)	4974.82	3773.52	3060.19	2407.18	2130.89	1754.65	↘ 18%	↘ 65%
	Purchased electricity (streetlighting)	9526.37	4907.04	3025.12	2335.85	2125.40	1755.70	↘ 17%	↘ 82%
	Total scope 2	**14501.19**	**8680.56**	**6085.31**	**4743.03**	**4256.29**	**3510.35**	↘ 18%	↘ 76%
Scope 3	Purchased goods and services	NA	NA	NA	NA	24075.48	31010.42	↗ 29%	NA
	Water supply and treatment	38.66	55.87	60.32	43.23	20.95	20.11	↘ 4%	↘ 48%
	Fuel- and energy-related activities	2246.34	1949.54	1653.37	1482.28	1766.47	1569.59	↘ 11%	↘ 30%
	Waste generated in operations	NA	NA	NA	NA	0.03	0.51	NA[3]	NA
	Business travel	184.15	340.92	246.27	106.27	166.12	195.54	↗ 18%	↗ 6%
	Employee commuting	NA	2134.06	2352.26	2039.96	2080.64	1974.41	↘ 5%	NA
	Leased assets	15727.32	13024.26	11908.97	10242.19	10072.42	8859.49	↘ 12%	↘ 44%
	Total scope 3	**18196.47**	**17504.65**	**16221.19**	**13913.93**	**38182.11**	**43630.07**	↗ 14%	NA
Totals	**Total scope 1 & 2**	**18902.82**	**13675.95**	**10852.84**	**9519.71**	**8680.79**	**7866.47**	↘ 9%	↘ 58%
	Total scope 1, 2 & 3[4]	**NA**	**NA**	**NA**	**NA**	**46862.90**	**51496.54**	↗ 10%	NA

[1] Some data has been updated for the 2022/23 report due to methodology changes to make the results more accurate in addition to a quality check from the 2021/22 annual report.
[2] Calculations for emissions from the vehicle fleet have been amended since the 2021/22 annual carbon report and the calculation is now based on direct fuel consumption instead of mileage. This is more accurate although has led to emissions from the fleet appearing higher than in previous report.
[3] Waste generated in operations currently covers City Hall only. For the 2021/22 financial year, data was only available from March 2022 (the final reporting month), meaning a fair comparison is not available with 2022/23.
[4] Some scope 3 emissions appear to have increased over time, due to some datasets not yet being available for previous years (purchased goods and services, employee commuting, business travel, waste generated in operations). A baseline comparison for 2017/18 is therefore not yet available for scope 3 emissions. This is something the Council is working on to be included in the next iteration of the annual report.

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' to 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. Aligned with the Tyndall Centre carbon budget, the Tyndall Centre also provide recommended interim targets – including base year decarbonisation targets and interim 5-yearly carbon budget targets. The current recommended interim targets for Sunderland, aligned with a 14.4% annual reduction in citywide emissions and a carbon budget of 8.2 $MtCO_2$ between 2020 – 2100, are to reduce CO_2 emissions by 65.5% by 2025 based on 2015 levels and to stay within a carbon budget of 5.8 $MtCO_2$ between 2018 – 2022.

1.2.2. In 2021, Sunderland emitted a net 1,089,313 tCO_2 (within the scope of influence for the local authority), representing an 6.5% increase from 2020 levels. Emissions were heavily influenced by the COVID-19 pandemic in 2020, which caused a significant temporary reduction in citywide emissions during the previous calendar year. Emissions in 2021 were 6.2% lower than 2019 levels (the most recent year data is available where emissions were not impacted by the COVID-19 pandemic). Against the 2015 citywide baseline, annual citywide emissions in 2021 have reduced by 21%. Although Sunderland exceeded its interim recommended science-based target of a 16.1% reduction between 2015 – 2020, Sunderland is not currently on track to meet the second recommended interim citywide decarbonisation target of 61.5% by 2025, based on a 2015 baseline. The city must therefore reduce annual emissions rapidly over the forthcoming years. However, due to targets being exceeded in previous years, Sunderland is on track to meet its first interim recommended 5-year carbon budget period of 5.8 $MtCO_2$ between 2018 – 2022 (aligned with the carbon budget of 8.2 $MtCO_2$ between 2020 – 2100). Citywide decarbonisation progress is shown on figure 1.

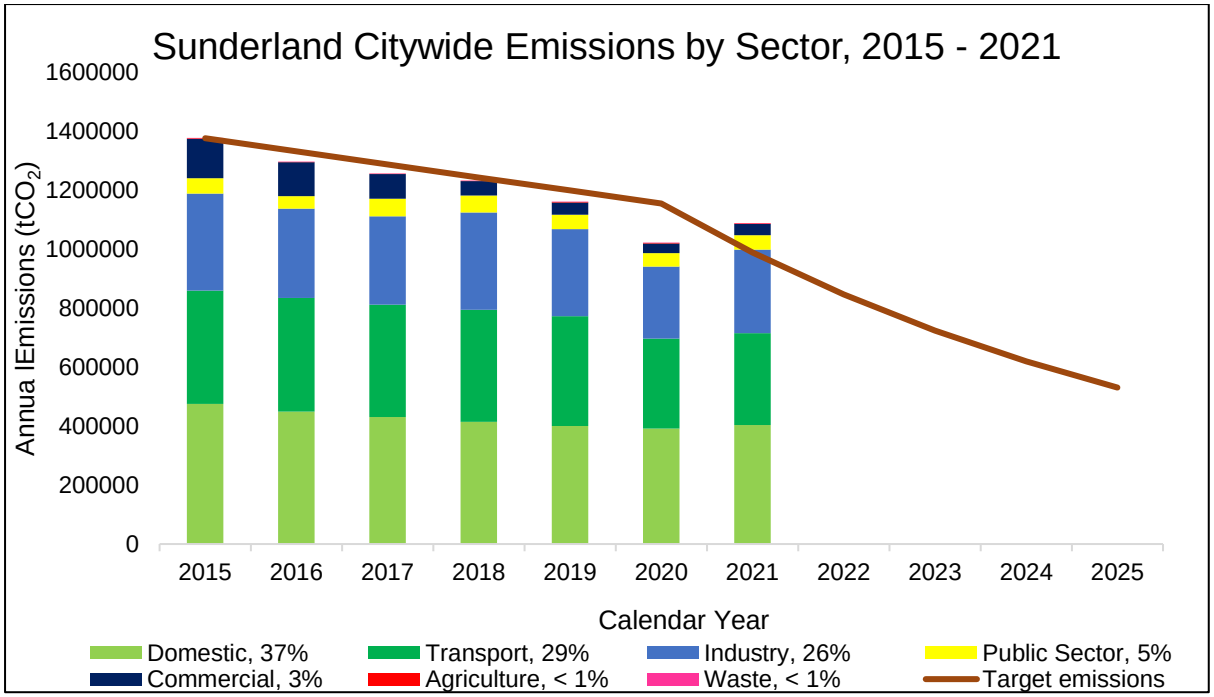

Figure 1 - Sunderland Citywide Long Term Carbon Reduction Targets

1.2.3. Table 2 shows how citywide emissions per sector have changed since the previous year and the 2015 baseline. Emissions from all sectors increased in 2021 compared with the 2020 calendar year, which is a national issue heavily linked to the COVID-19 pandemic. Emissions from all sectors have decreased since the 2015 city baseline, except for agriculture. Some sectors are undergoing emissions reduction at much higher rates than other sectors in the city. Domestic energy and transport have historically been the two major emitters of CO_2 in Sunderland (a pattern which continued this year) and accounted for over two thirds of annual citywide CO_2 emissions in 2021. During 2020 domestic energy overtook transport as the main source of CO_2 emissions in Sunderland. This trend continued into 2021, with many COVID-19 restrictions still in place and therefore continued low travel rates and people spending large amounts of time at home. It is expected that as data becomes available for the next couple of years, transport emissions will increase again as people return to their normal lives and / or establish new travel patterns.

Table 2 - Citywide emission trends per sector since 2020 and the 2015 baseline

Sector	2021 Emissions	Trend since 2020 (previous year)	Trend since 2015 (baseline)
Industry	282,838	↗15%	↘14%
Commercial	37,935	↗15%	↘72%
Public	49,713	↗15%	↘3%
Domestic	404,399	↗3%	↘15%
Transport	311,863	↗2%	↘19%
Agriculture	2,297	↗2%	↗43%
Waste management	269	↗0.4%	↘0.7%

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 CO_2 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 2 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 CO_2 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.

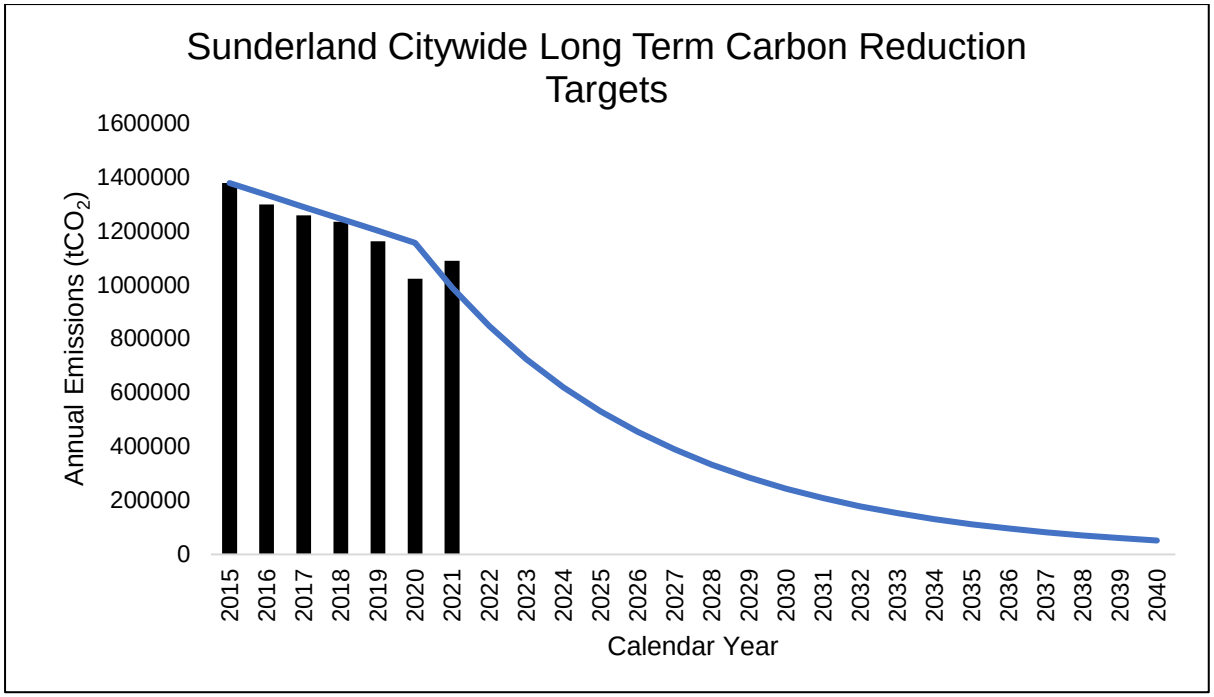

Figure 2 - Long term carbon reduction targets aligned with the carbon budget recommended by the Tyndall Centre (Tyndall Centre, 2023)

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 3 and 4. 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 excluded from this budget.

Table 3 - Interim carbon budget recommendations for Sunderland (Tyndall Centre, 2023)

Carbon Budget Period	**Recommended Carbon Budget (Mt CO_2)**
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 4 - Interim 5-yearly annual emission reduction targets from a 2015 baseline recommended for Sunderland (Tyndall Centre, 2022)

Year	Cumulative Reduction in Annual Emissions from 2015 baseline
2020	16.1%
2025	61.5%
2030	82.4%
2035	91.9%
2040	96.3%
2045	98.3%
2050	99.2%

2.1.5. Progress in relation to the targets outlined in Tables 3 and 4 is set out in section 5.

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 sets 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 subsequently 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 Reducing 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 and signing the pledge further raises the ambition of Sunderland City Council's low carbon ambitions for its own operations to achieve net-zero greenhouse gas emissions by 2030 and for the wider city to achieve net-zero greenhouse gas emissions by 2045 or as soon as possible.

2.2.4. This report is the third 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 2021/22 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 completed its annual disclosure to CDP (formerly Carbon Disclosure Project) in July 2023. 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 annual 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 2023 CDP disclosure builds upon the Council's first two disclosures in 2021 and 2022. For both previous disclosures Sunderland received a grade 'A' and was recognised as a global leader in climate change action and reporting. Sunderland is currently 1 of 19 cities in the UK, and 1 of 123 globally, to hold CDP leadership status.

4. Sunderland City Council - Carbon footprint

4.1. Background

4.1.1. Sunderland City Council is working to measure and report greenhouse gas emissions in-line with the Greenhouse Gas Protocol Corporate Standard. The Council's emissions are therefore 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 emissions 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 portfolio assets which are not under the Council's direct financial control (i.e., the Council does not control the budget spend) are classified as scope 3. This reflects the fact that the Council has less direct influence on reducing these emissions.

4.1.3. The Council's scope 1 and 2 emissions currently consist of both Council and Together for Children assets, including:

- Gas consumption in buildings
- Liquid fuels for the vehicle fleet
- Generation of purchased electricity for streetlighting in the city
- Generation of purchased electricity in buildings

4.1.4. The Council currently reports on the following sources of scope 3 emissions[5]:

- Purchased goods and services
- Water supply and treatment
- Energy- and fuel-related activities (including electricity transmission & distribution in addition to well-to-tank emissions)
- Business travel (including air, rail, grey fleet and hotels)
- Leased assets (including gas consumption and electricity consumption for SCAS, schools, fire stations and some vacant assets, in addition to the vehicle fleet of SCAS and schools).
- Employee commuting and working from home emissions
- Waste generated in operations

[5] Waste generated in operations and well-to-tank emissions are being reported for the first time in this annual report.

4.1.5. There are several likely sources of emissions currently excluded from the Council's emissions inventory. Fugitive emissions (for example, from refrigerant gases, air conditioning and heat pumps) are currently excluded from scope 1 due to data not being available. 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 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.

4.1. City Council - Greenhouse Gas Emissions Inventory

4.1.1. Table 5 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 2022/23 levels finishing 1% below the 2017/18 baseline) while scope 2 emissions have been consistently declining (with 2022/23 levels finishing 76% below the 2017/18 baseline, partly due to the ongoing decarbonisation of the National Grid).

4.1.2. The Council is also continuing to develop its scope 3 datasets, in line with the Greenhouse Gas Protocol. Based on the current data available, scope 3 emissions for the Council are estimated to have accounted for 43,630 tCO_2e in 2022/23 (85% of the Council's overall emissions, increasing from 82% in 2021/22). A baseline comparison for 2017/18 is not yet available for scope 3 emissions. Focus on scope 3 emission sources (our indirect emissions) will continue to increase as we move forward, to bring our value chain with us on our Low Carbon journey and achieve an increasingly robust monitoring process. As part of this, a baseline comparison for 2017/18 is expected to be included in the next annual report).

Table 5 - Sunderland City Council's Greenhouse Gas Emissions Inventory, 2022/23

		Annual Emissions (tCO_2e)[6]							
Scope	**Source**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**Trend from previous year**	**Trend from base year**
Scope 1	Gaseous fuels	2092.03	2299.56	2408.74	2399.79	2000.29	1967.15	↘ 2%	↘ 6%
	Liquid fuels (fleet)[7]	2309.60	2702.83	2358.79	2376.89	2424.21	2388.97	↘ 2%	↗ 3%
	Total scope 1	**4401.63**	**4995.39**	**4767.53**	**4776.68**	**4424.50**	**4356.12**	↘ 2%	↘ 1%
Scope 2	Purchased electricity (buildings)	4974.82	3773.52	3060.19	2407.18	2130.89	1754.65	↘ 18%	↘ 65%
	Purchased electricity (streetlighting)	9526.37	4907.04	3025.12	2335.85	2125.40	1755.70	↘ 17%	↘ 82%
	Total scope 2	**14501.19**	**8680.56**	**6085.31**	**4743.03**	**4256.29**	**3510.35**	↘ 18%	↘ 76%
Scope 3	Purchased goods and services	NA	NA	NA	NA	24075.48	31010.42	↗ 29%	NA
	Water supply and treatment	38.66	55.87	60.32	43.23	20.95	20.11	↘ 4%	↘ 48%
	Fuel- and energy-related activities	2246.34	1949.54	1653.37	1482.28	1766.47	1569.59	↘ 11%	↘ 30%
	Waste generated in operations	NA	NA	NA	NA	0.03	0.51	NA[8]	NA
	Business travel	184.15	340.92	246.27	106.27	166.12	195.54	↗ 18%	↗ 6%
	Employee commuting	NA	2134.06	2352.26	2039.96	2080.64	1974.41	↘ 5%	NA
	Leased assets	15727.32	13024.26	11908.97	10242.19	10072.42	8859.49	↘ 12%	↘ 44%
	Total scope 3	**18196.47**	**17504.65**	**16221.19**	**13913.93**	**38182.11**	**43630.07**	↗ 14%	NA
Totals	**Total scope 1 & 2**	**18902.82**	**13675.95**	**10852.84**	**9519.71**	**8680.79**	**7866.47**	↘ 9%	↘ 58%
	Total scope 1, 2 & 3[9]	**NA**	**NA**	**NA**	**NA**	**46862.90**	**51496.54**	↗ 10%	NA

[6] Some data has been updated for the 2022/23 report due to methodology changes to make the results more accurate in addition to a quality check from the 2021/22 annual report. A summary of methodology changes can be found in Appendix A.
[7] Calculations for emissions from the vehicle fleet have been amended since the 2021/22 annual carbon report and the calculation is now based on direct fuel consumption instead of mileage. This is more accurate although has led to emissions from the fleet appearing higher than in previous report.
[8] Waste generated in operations currently covers City Hall only. For the 2021/22 financial year, data was only available from March 2022 (the final reporting month), meaning a comparison is not available with 2022/23.
[9] Some scope 3 emissions appear to have increased over time, due to some datasets not yet being available for previous years (purchased goods and services, employee commuting, business travel, waste generated in operations). A baseline comparison for 2017/18 is therefore not yet available for scope 3 emissions. This is something the Council is working on to be included in the next iteration of the annual report.

4.2. Scope 1 and 2 Emissions

4.2.1. Figure 3 shows the trend for the Council's scope 1 and 2 emissions since the 2017/18 baseline.

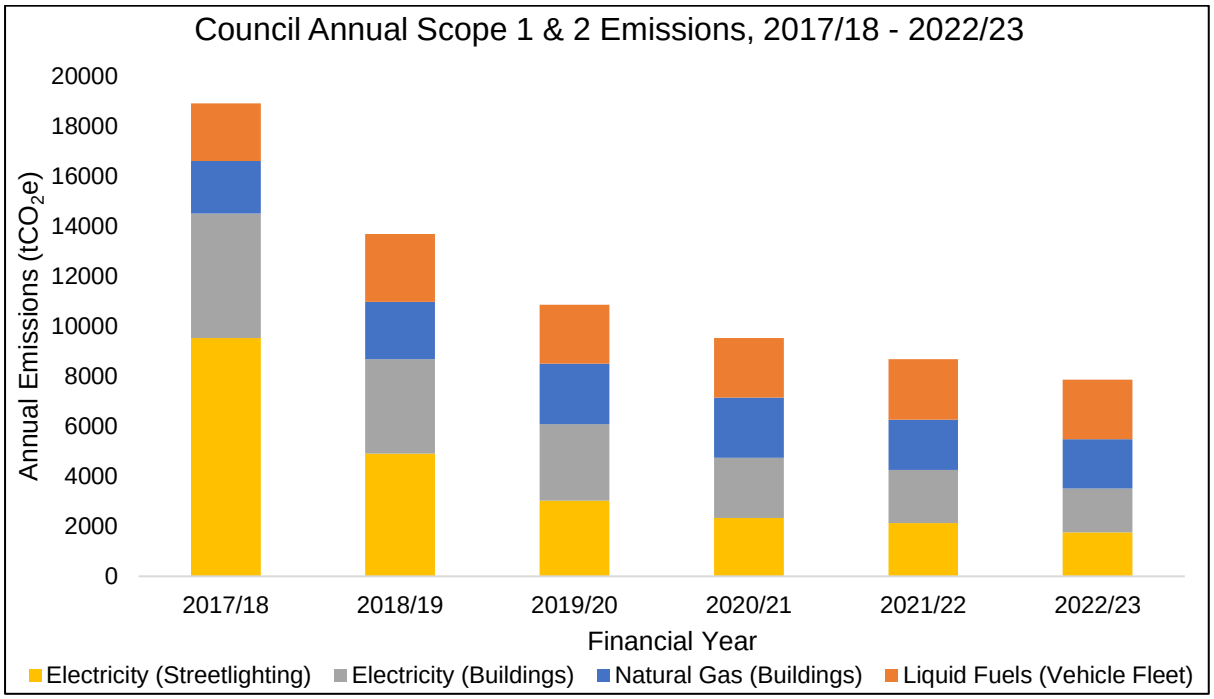

Figure 3 - Annual Council Scope 1 & 2 Emissions, 2017/18 – 2022/23

4.2.2. As set out in the overview within Section 1, annual scope 1 and 2 emissions reduced by 814 tCO_2e (6%) from 2021/22 to 2022/23. Of this 814 tCO_2e, 46% was due to the decarbonisation of the National Grid. The remaining reduction was due to reduced energy usage in gas (primarily due to the closure of the Civic Centre), electricity and liquid fuels for the vehicle fleet.

4.2.3. The main source of scope 1 and 2 emissions from Council operations in 2022/23 was liquid fuel for the vehicle fleet, emitting 2389 tCO_2e. Calculations for emissions from the vehicle fleet have been amended since the 2021/22 annual carbon report and the calculation is now based on direct fuel consumption instead of mileage. This is more accurate although has led to emissions from the fleet appearing higher than in previous report. The improved methodology shows that the vehicle fleet has been the highest emitting source of Council scope 1 and 2 emissions for the last 2 years. Furthermore, it is also the source which is decarbonising at the slowest rate.

4.2.4. The largest reductions in emissions from Council operations were electricity generation from streetlighting and then from buildings. This was partly due to the decarbonisation of the National Grid for electricity and partly due to reduced consumption across the estate.

4.2.5. Gas consumption accounted for 26% of Council scope 1 and 2 emissions in the 2022/23 financial year, increasing from 23% in 2021/22. Following the closure of the Civic Centre, Bishopwearmouth Crematorium is now the largest consumer of gas across the Council's estate as shown in Figure 4. A small proportion of the Council's buildings account for a significant proportion of its gas consumption, with the top 10 sites emitting 90% of the Council's gas emissions in 2022/23 (increasing from 86% in 2021/22).

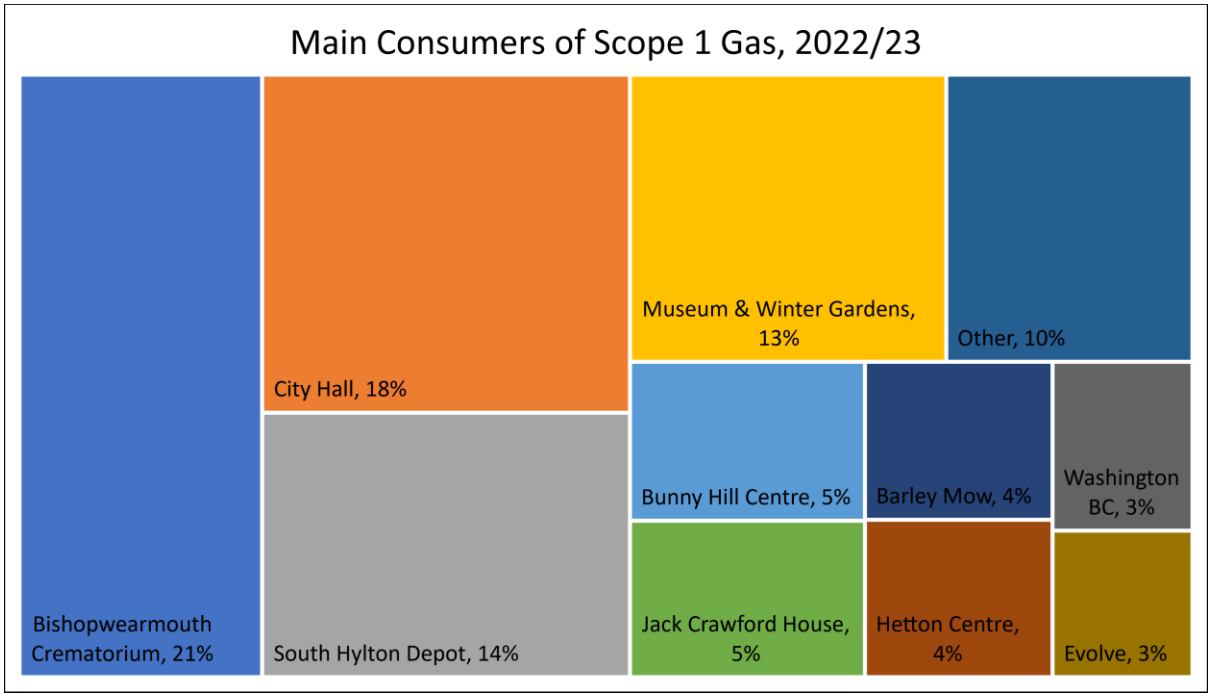

Figure 4 - Main consumers of scope 1 gas, 2022/23

4.2.6. Of all Council scope 1 and 2 emissions sources, emissions from the vehicle fleet reduced the least during 2022/23, with a reduction of 2%. This reduction is similar to previous trends, as emissions from the Council's vehicle fleet have been fluctuating since the 2017/18 baseline. Furthermore, due to greater reductions in overall emissions from gas and electricity since the 2017/18 baseline, the fleet has taken up a higher proportion of the Council's overall scope 1 and 2 emissions, accounting for 30% in 2022/23 compared to just 12% in 2017/18. As evidenced in figure 6, most emissions come from diesel HGVs which is a hard-to-treat emissions source. The challenge of decarbonising fleet is recognised in the City Council's Action Plan and the Council is currently reviewing 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 and financial constraints. It should be noted that emissions from electric vehicles within the Council's fleet are currently recorded elsewhere within scope 2 purchased electricity emissions and therefore not reflected in Figure 5 below. 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 measured and reported separately in future years.

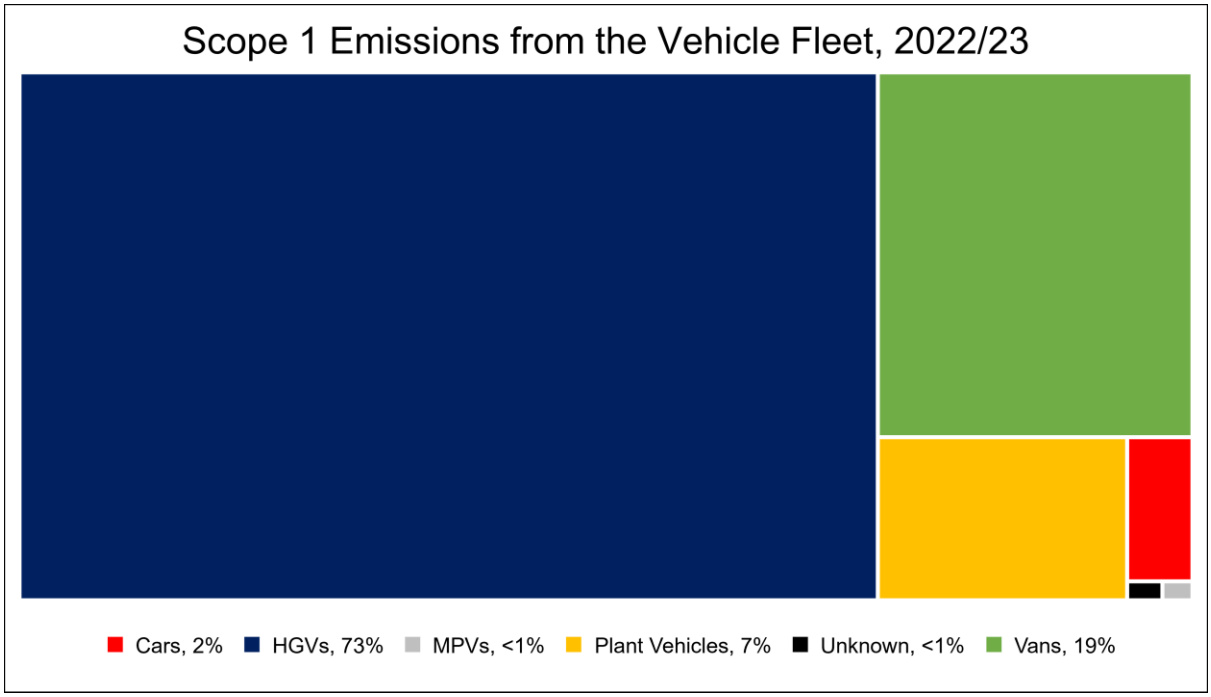

Figure 5 – Emissions from liquid fuels for the vehicle fleet by vehicle type, 2022/23

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 reduced energy consumption from both streetlighting and Council buildings. Between 2021/22 and 2022/23, 45% of the reduction in emissions from purchased electricity generation was due to the decarbonisation of the National Grid.

4.2.8. Electricity from streetlighting currently accounts for 22% of Council scope 1 and 2 emissions. Following the successful rollout of citywide LED streetlighting between 2016/17 - 2021/22, saving 21,000MWh and 5370 tCO_2e annually, the Council has progressed LED lighting to street lit signs. Further LED lighting upgrades to parks, associated buildings and traffic signals are ongoing and will deliver additional carbon and energy savings. Electricity from Council buildings also currently accounts for 22% of Council scope 1 and 2 emissions. As observed with gas, a small proportion of the Council's operational estate accounts for a large proportion of CO_2e emissions from electricity in buildings, with the top 10 sites accounting for 77% of CO_2e of the Council's emissions from electricity. The main consumers of scope 2 electricity are shown in figure 6.

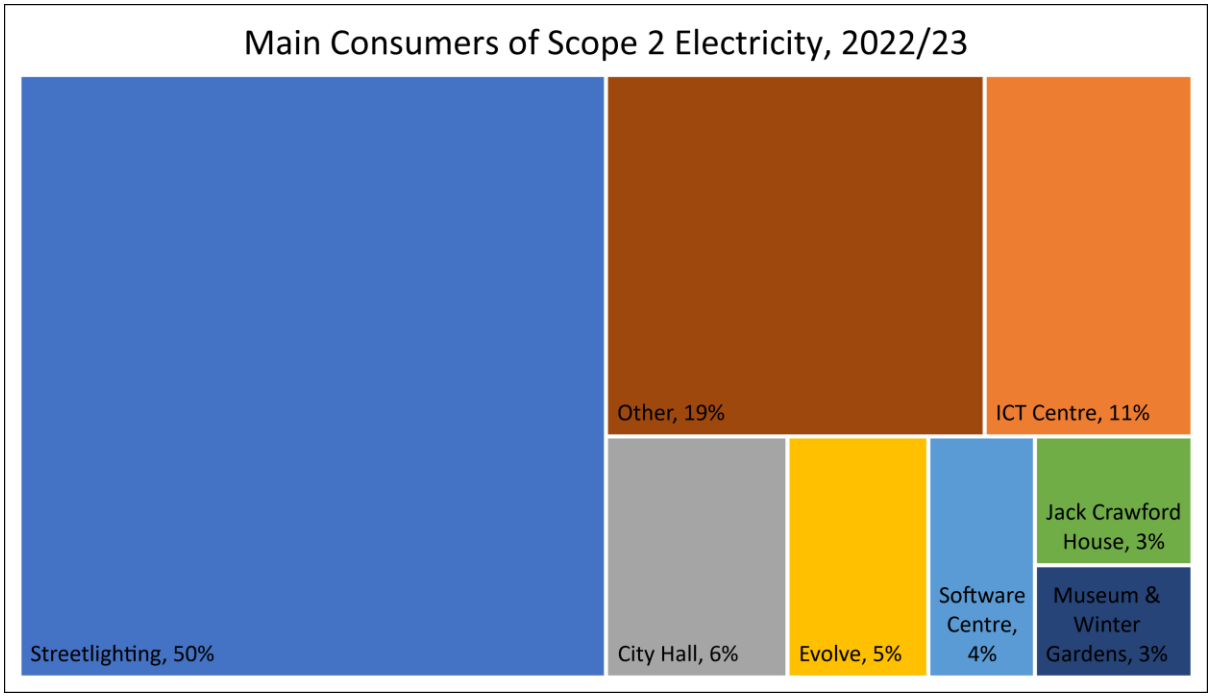

Figure 6 - Main consumers of scope 2 electricity, 2022/23

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, however it is more challenging to collect accurate data and organisations generally have less control over them.

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 ensure it can 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 85% of overall emissions, as shown in figure 7.

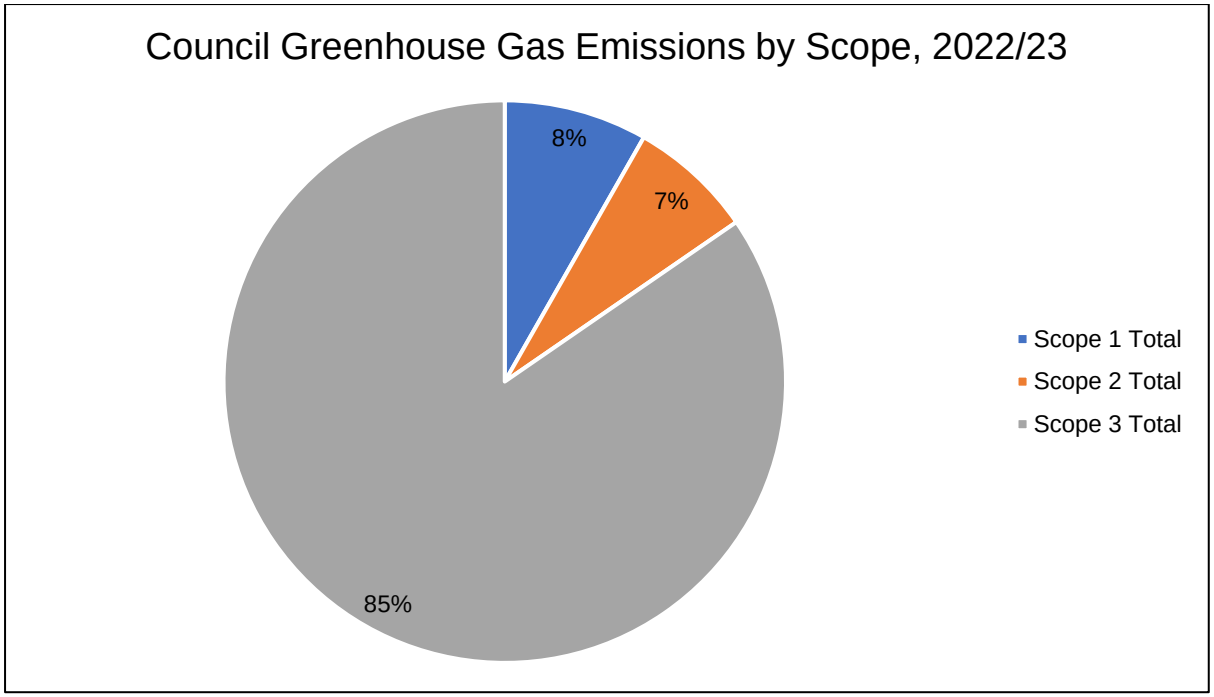

Figure 7 - Council greenhouse gas emissions by scope, 2022/23

4.3.4. The remainder of this section covers emissions for each of the Council's scope 3 categories in turn, setting out the key trends from 2017/18 to 2022/23.

4.3.5. Figure 8 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. Leased assets also contribute significantly to the Council's scope 3 emissions, due to purchased electricity generation and gas consumption in SCAS buildings, schools, fire stations and some vacant assets. Commuting and home working make up 5% of the Council's estimated scope 3 emissions, primarily due to the private car. Fuel and energy-related activities make up 4% of the Council's scope 3 emissions, primarily due to well-to-tank emissions. Water supply and treatment, employee business travel and waste generated in operations make up the remaining 1% of scope 3 emissions. These emission sources are evaluated in more depth throughout this report.

4.3.6. Purchased goods and services are a significant source of indirect greenhouse gas emissions for the Council, accounting for 71% of the Council's estimated scope 3 emissions, and 60% 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 9,

a handful of carbon-intensive categories form a significant proportion of estimated emissions from purchased goods and services.

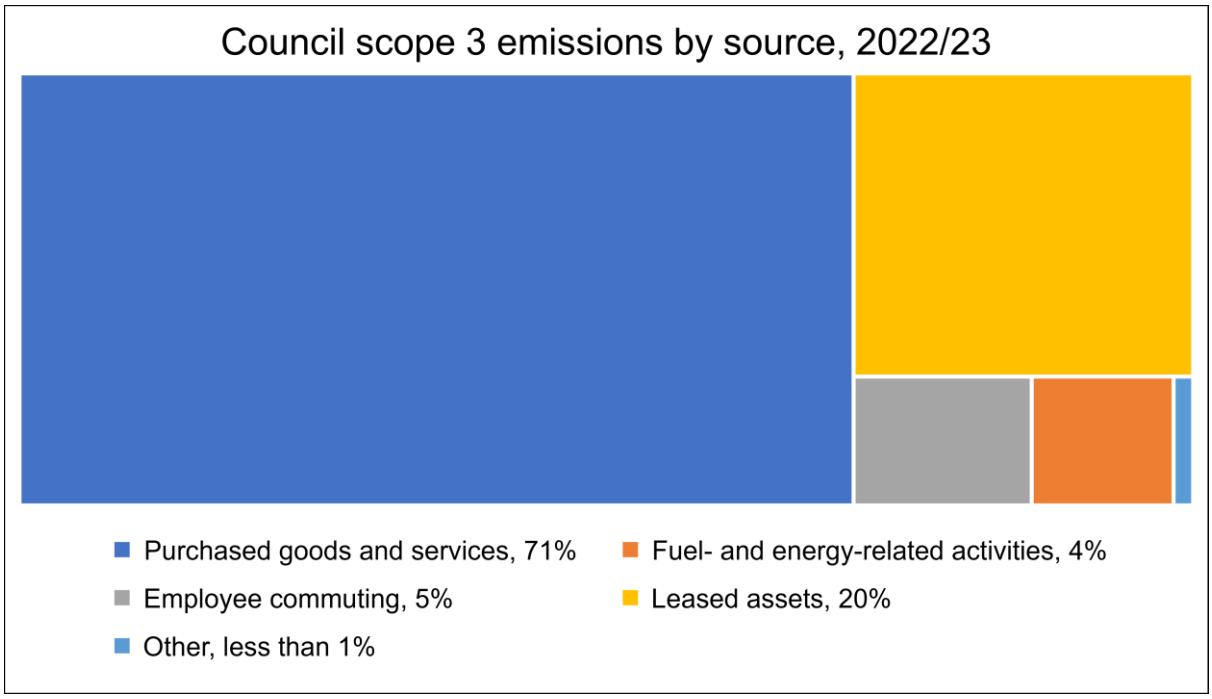

Figure 8 - Council estimated scope 3 emissions breakdown, 2022/23

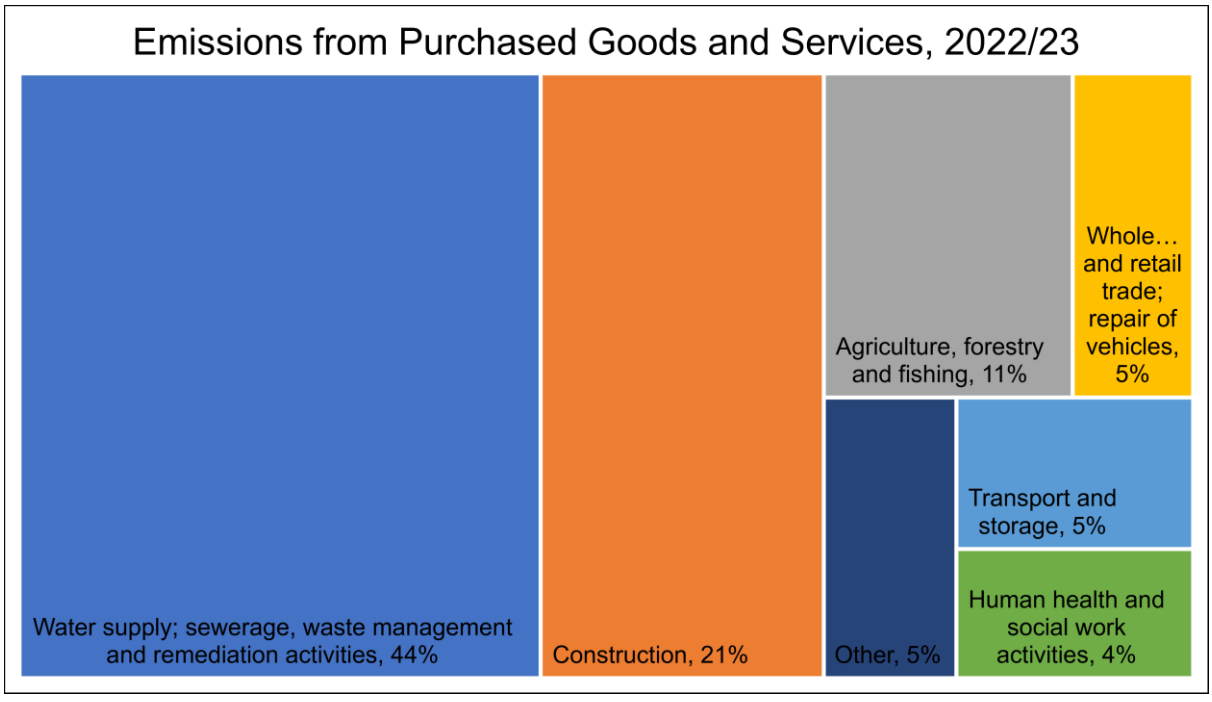

Figure 9 - Emissions from Purchased Goods and Services, 2022/23[10]

[10] Emissions from purchased goods and services have been calculated by mapping the Council's annual spend against the 16 Standard Industrial Classification (SIC) codes from Companies House (Standard industrial classification of economic activities (SIC) - GOV.UK (www.gov.uk)).

4.3.7. 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 involves using spend data for the previous financial year and applying carbon intensity factors based on industry averages across different sectors. 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. 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. 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. 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. The leased assets category includes buildings identified as scope 3, classed as those which are in the Council's portfolio but not in its direct financial control. This includes SCAS buildings, schools and academies, nurseries, fire stations and some vacant assets. Leased assets also consist of the vehicle fleet for SCAS and schools, where the Council has available data. Emissions from leased assets continued to fall in the 2022/23 financial year, as shown in figures 10 and 11. Leased assets emissions from electricity generation decreased by 14% since the previous year, emissions from gas decreased by 12% although emissions from liquid fuels increased by 2%. Emissions related to SCAS operations decreased by 18%, emissions related to schools decreased by 11%, emissions from fire stations decreased by 11%.

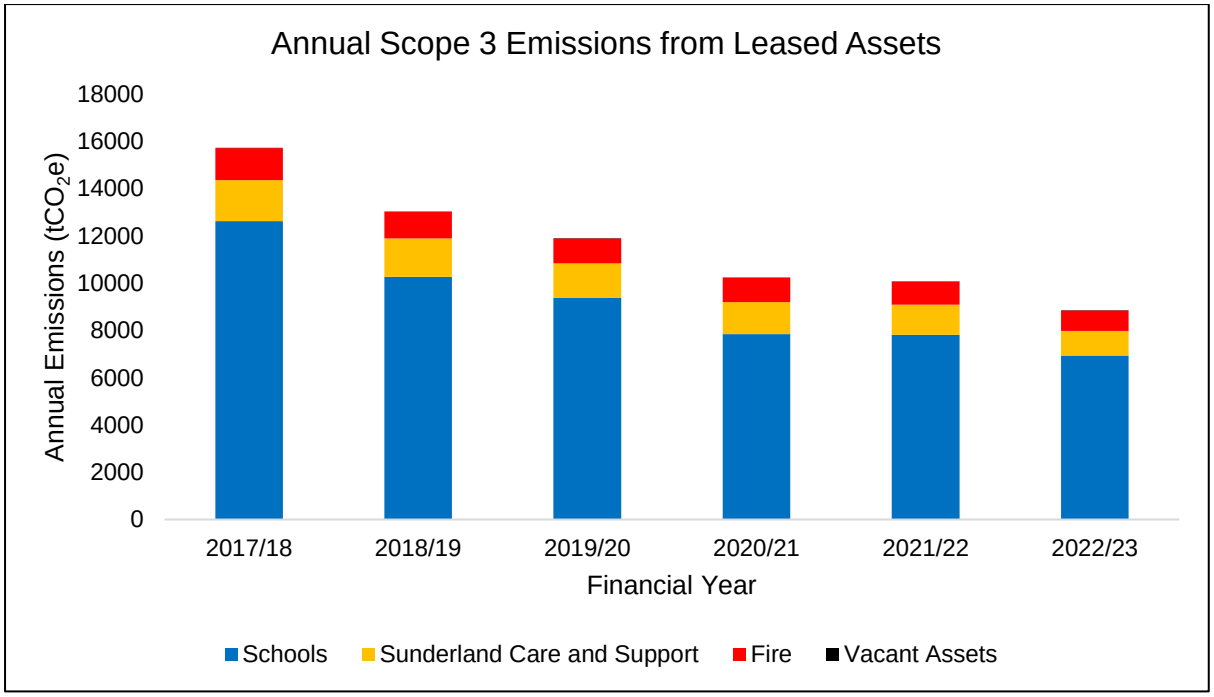

Figure 10 - Scope 3 emissions from leased assets

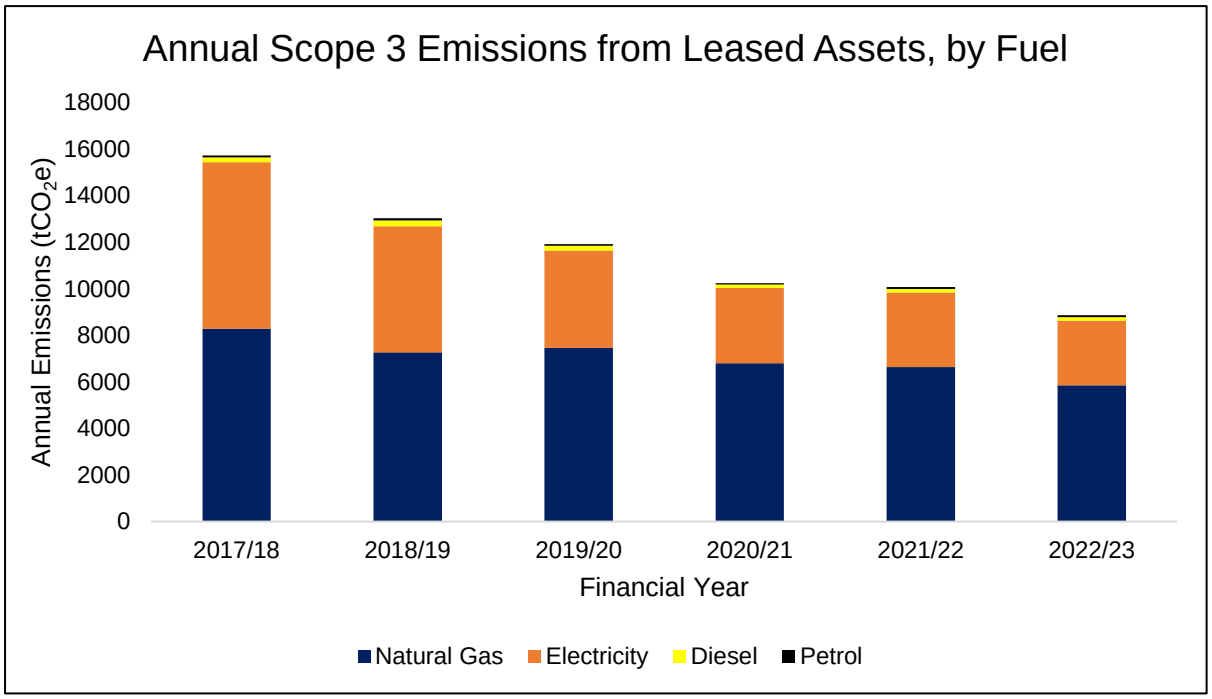

Figure 11 - Annual scope 3 emissions from leased assets, by fuel

4.3.9. Annual business travel emissions are shown in figure 12. Emissions from business travel have been increasing since 2020/21, which was the lowest point for emissions from this source across the previous 6 years and heavily linked to the COVID-19 pandemic, with people forced to work from home. Since restrictions have been lifted, more meetings have taken place in person and

staff have had more freedom to travel between workplaces, events, stakeholder and partner premises among other locations for work leading to increased distance travelled. Emissions from the Council's electric vehicle mobility hub are accounted for in scope 2 'purchased electricity' and use of these electric vehicles has the potential to replace some business travel mileage in grey fleet vehicles, replacing them with a less carbon intensive mode of travel. The Council's business travel emissions from flights consisted of domestic and short-haul flights only.

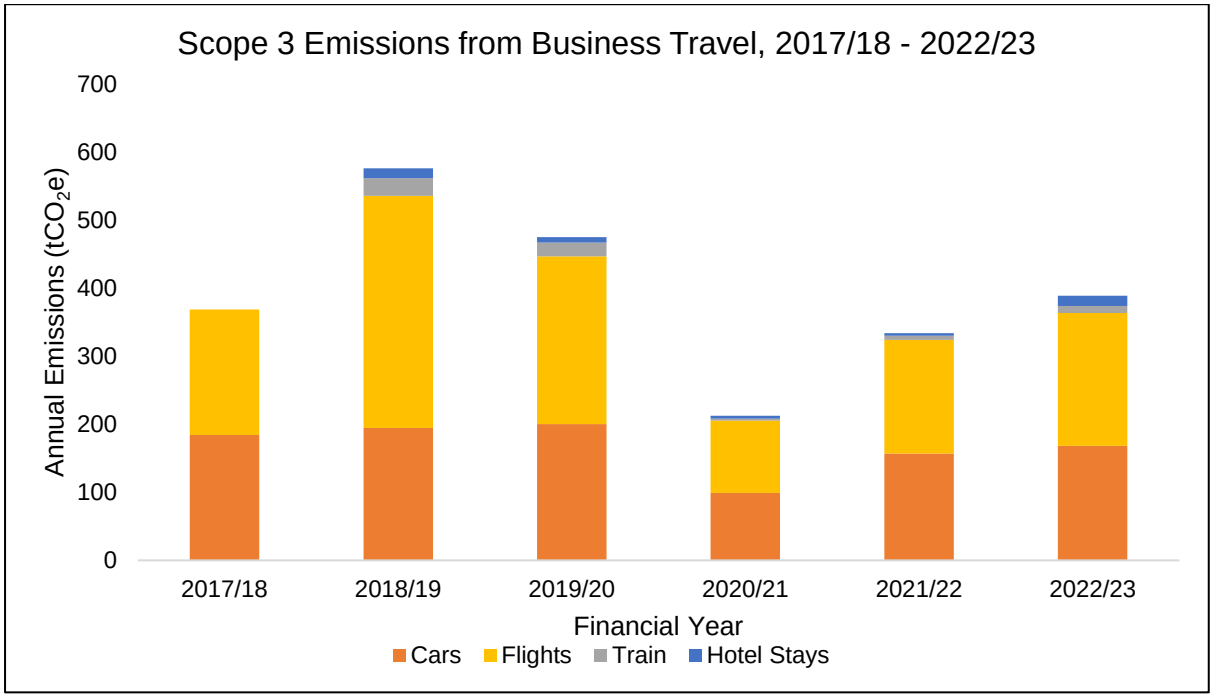

Figure 12 - Scope 3 emissions from business travel, 2017/18 - 2022/23

4.3.10. Emissions from fuel and energy-related activities include electricity transmission and distribution as well as well-to-tank emissions (all greenhouse gas emissions from the production, transportation, transformation and distribution of a particular fuel). Although the Council has previously recorded data for electricity transmission and distribution, this is the first year where data has been available for well-to-tank emissions, due to carbon conversion factors being made available by DESNZ. A summary of methodology changes can be found in Appendix A. Figure 13 shows that emissions from energy- and fuel-related activities steadily declined between 2017/18 and 2020/21, with a low peak during the COVID-19 pandemic. Emissions then increased in 2021/22 before beginning to reduce again in 2022/23. Each source of well-to-tank emissions has witnessed fluctuations in emissions. Emissions from electricity transmission and distribution have been continually declining, linked to the decarbonisation of the national grid.

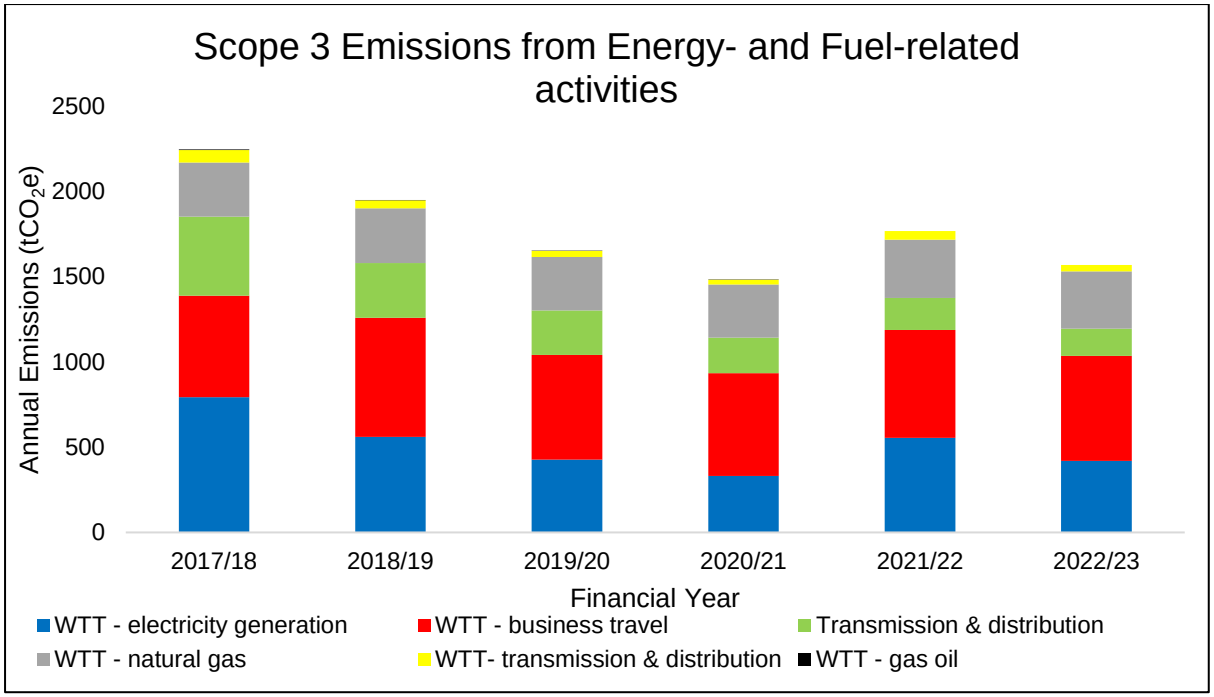

Figure 13 - Scope 3 emissions from energy- and fuel-related activities, 2017/18 - 2022/23

4.3.11. Emissions from employee commuting covers both the emissions from staff travel to and from work via various modes of transport as well as the emissions from home working as an alternative to commuting. In 2018/19, the Council did not estimate emissions from home working, as this would have reflected the working patterns of a very small number of colleagues. However, during the 2020/21 and 2021/22 financial years, most staff worked at home full time due to the COVID-19 pandemic, meaning it was therefore more appropriate to measure emissions from home working. 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 14 shows that emissions from employee commuting have been fluctuating since data was first recorded in 2018/19. However, since home working became a significant modal share within employee commuting (2020/21), annual emissions have been lower than years prior. This indicates 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.

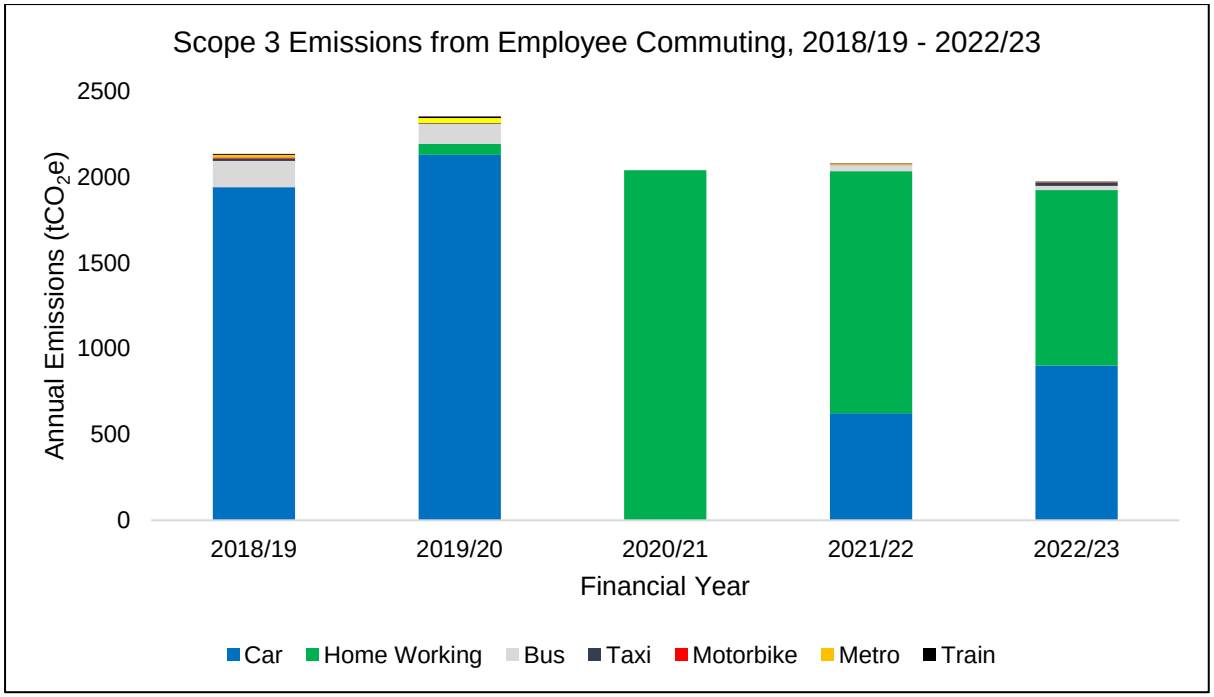

Figure 14 - Scope 3 emissions from employee commuting, 2018/19 - 2022/23

4.3.12. Figure 15 shows the annual emissions from water supply and treatment in Council buildings. Water-related emissions have been fluctuating in recent years, which is directly related to consumption. Water consumption has decreased by 22% from a high peak of 57,340 cubic metres in 2019/20 to 44,614 cubic metres in 2022/23. This is largely influenced by closure of the Civic Centre and the Council's move towards flexible and agile working following the COVID-19 pandemic.

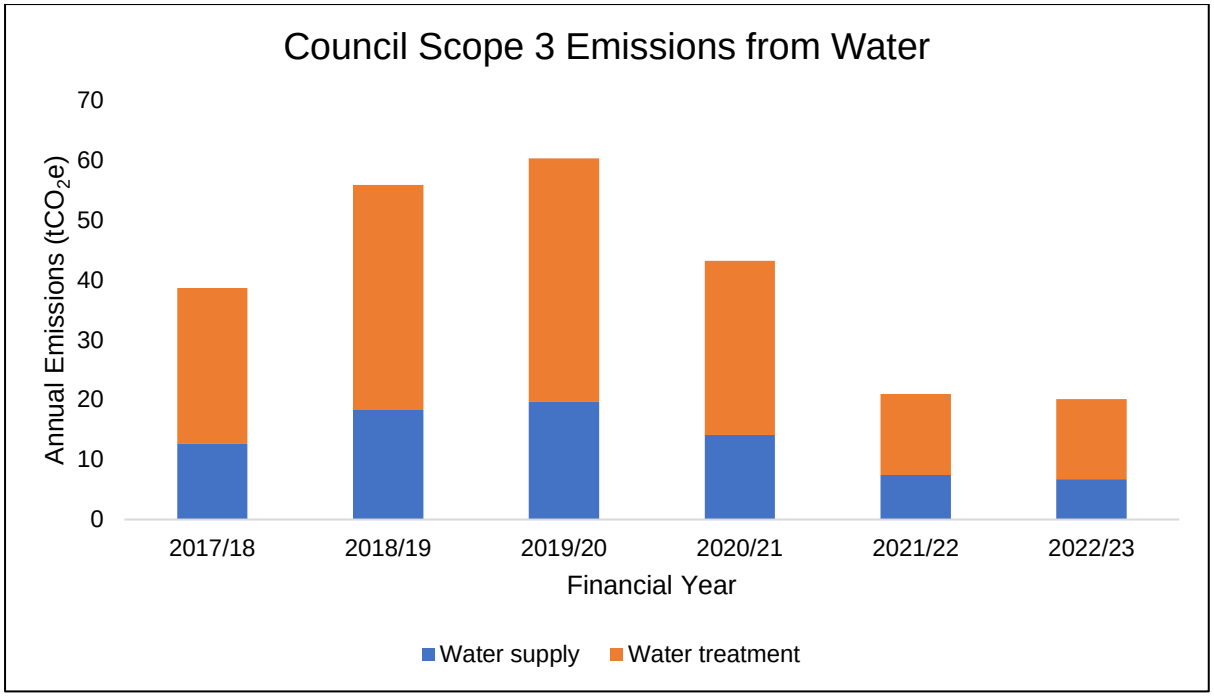

Figure 15 - Scope 3 emissions from water supply and treatment, 2017/18 - 2022/23

4.3.13. This is the first low carbon data report where data for emissions from waste generated in operations has been available for the Council's estate. This data is still being developed, with the current data limited to City Hall waste generation only. Data came online in March 2022 (the final month of the 2021/22 financial year) so an appropriate comparison is not available with the previous year.

5. Sunderland Citywide Carbon Footprint

5.1. Overview

5.1.1. The 2021 Department for Energy Security and Net Zero (DESNZ) update for citywide emissions estimates was released in June 2023 and represents the most recent carbon emission data available at city level. The data shows that 1,089,312.77 tCO_2 were emitted within the scope of influence of the local authority in Sunderland in 2021. This consists of emissions from the industrial, commercial, public, domestic, agriculture, transport and waste sectors. Sunderland's citywide emissions since the 2015 baseline are shown on figure 16.

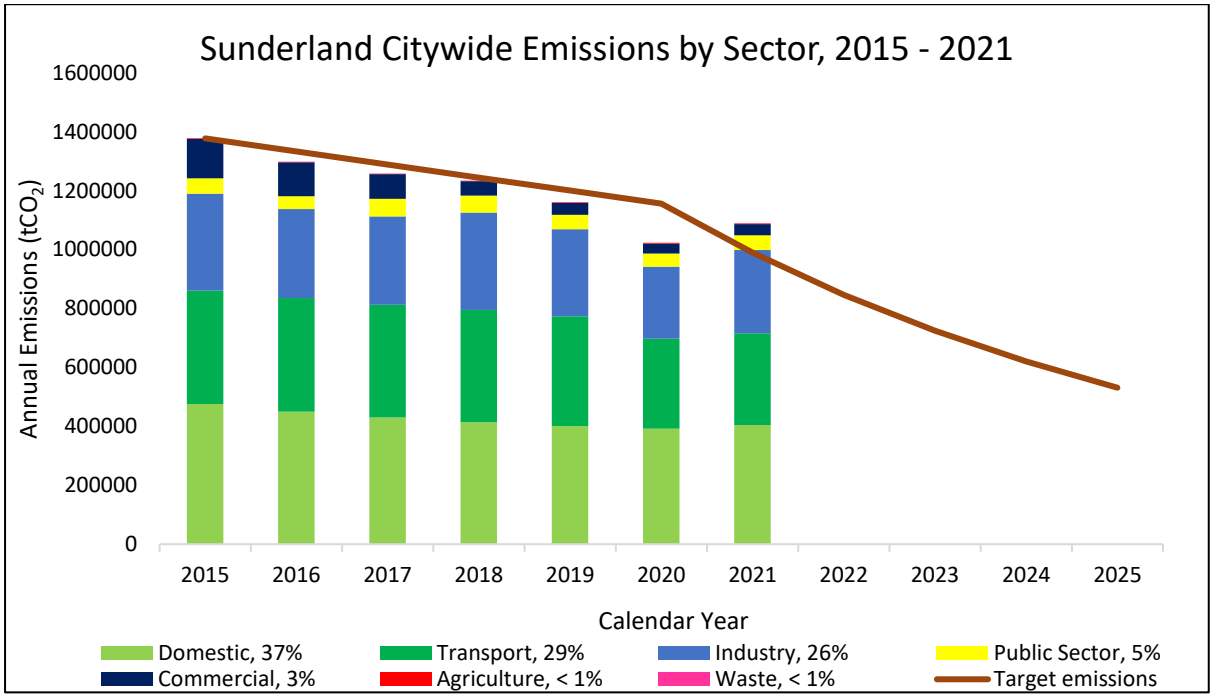

Figure 16 - Sunderland citywide emissions and targets, 2015 - 2021

5.1.2. In 2021, Sunderland emitted a net 1,089,313 tCO_2 (within the scope of influence for the local authority), representing a 6.5% increase from 2020 levels. This was heavily influenced by the COVID-19 pandemic in 2020, which caused a significant temporary reduction in citywide emissions during the previous calendar year. Emissions in 2021 were 6.2% lower than 2019 levels (the most recent year data is available where emissions were not impacted by the COVID-19 pandemic). Against the 2015 citywide baseline, annual citywide emissions have reduced by 21%. Although Sunderland exceeded its interim recommended science-based target of a 16.1% reduction between 2015 – 2020, Sunderland is not currently on track to meet the second recommended interim citywide decarbonisation target of 61.5% by 2025, based on a 2015 baseline. The city must therefore reduce annual emissions rapidly over the forthcoming years. However, due to targets being exceeded in previous years,

Sunderland is on track to meet its first interim recommended 5-year carbon budget period of 5.8 $MtCO_2$ between 2018 – 2022 (aligned with the carbon budget of 8.2 $MtCO_2$ between 2020 – 2100). The full range of interim targets set by the Tyndall Centre are set out in section 2.1.4.

1.2.4. Table 6 shows how citywide emissions per sector have changed since the previous year and the 2015 baseline. Emissions from all sectors increased in 2021 compared with the 2020 calendar year, which is a national issue heavily linked to the COVID-19 pandemic. Emissions from all sectors have decreased since the 2015 city baseline, except for agriculture. Some sectors are undergoing emissions reduction at much higher rates than other sectors in the city. Domestic energy and transport have historically been the two major emitters of CO_2 in Sunderland (a pattern which continued this year) and accounted for over two thirds of annual citywide CO_2 emissions in 2021. During 2020 domestic energy overtook transport as the main source of CO_2 emissions in Sunderland. This trend continued into 2021, with many COVID-19 restrictions still in place and therefore continued low travel rates and people spending large amounts of time at home. It is expected that as data becomes available for the next couple of years, transport emissions will increase again as people return to their normal lives and / or establish new travel patterns.

Table 6 - Citywide emission trends per sector since 2020 and the 2015 baseline

Sector	2021 Emissions	Trend since 2020 (previous year)	Trend since 2015 (baseline)
Industry	282,838	↗15%	↘14%
Commercial	37,935	↗15%	↘72%
Public	49,713	↗15%	↘3%
Domestic	404,399	↗3%	↘15%
Transport	311,863	↗2%	↘19%
Agriculture	2,297	↗2%	↗43%
Waste management	269	↗0.4%	↘0.7%

5.1.3. 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.

5.2. Industrial emissions

5.2.1. Figure 17 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). Emissions from the industrial sector in 2021 increased by 15% compared to 2020 (when the sector's activity was influenced by COVID-19) and the industrial sector is behind its apportioned 2021 target for decarbonisation. Reductions have been driven by electricity, with a 47% reduction since the 2015 baseline. Emissions from gas were 9% higher in 2021

than the 2015 baseline. Other industrial emissions have witnessed a similar trend, being 8% higher than the 2015 baseline.

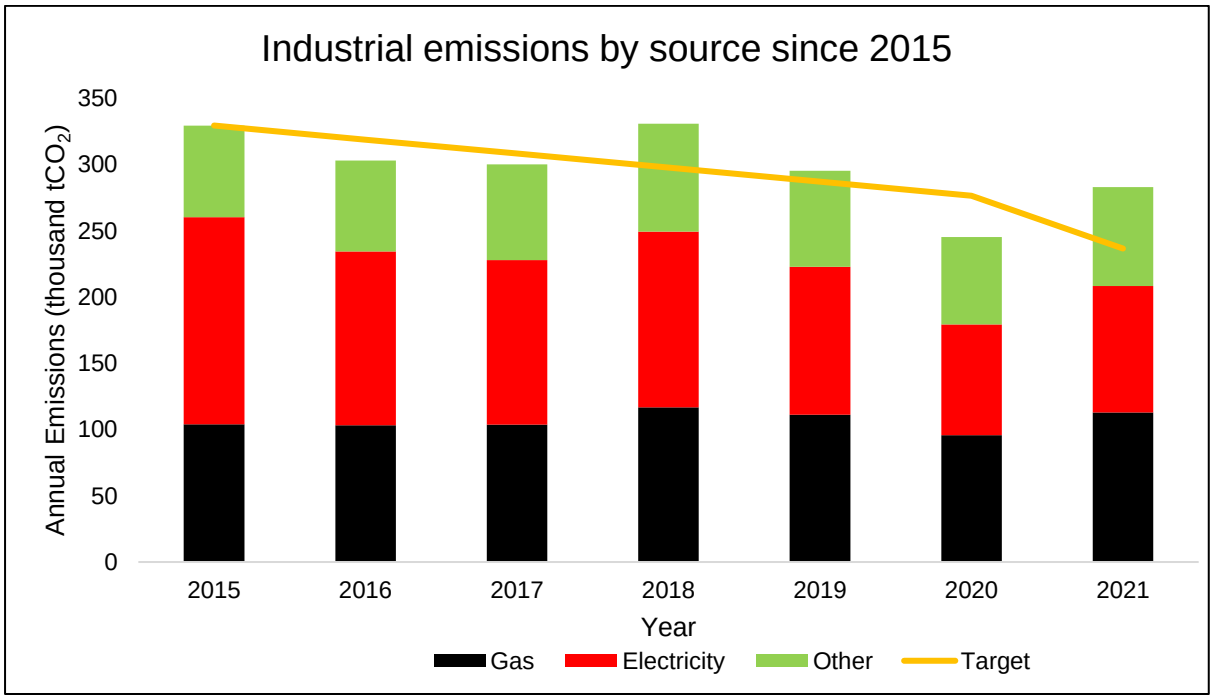

Figure 17 - Industrial emissions by source and progress comparison against an equal share of the carbon budget

5.2.2. In relation to comparison data, as can be seen in figure 18, the industrial sector has decarbonised at a faster rate since the 2015 baseline than both the North East and national average. The increase in emissions from the industrial sector from 2020 to 2021 follows both the regional and national trend. Unlike the regional and national trend however, emissions from industry in Sunderland were lower in 2021 compared to 2019.

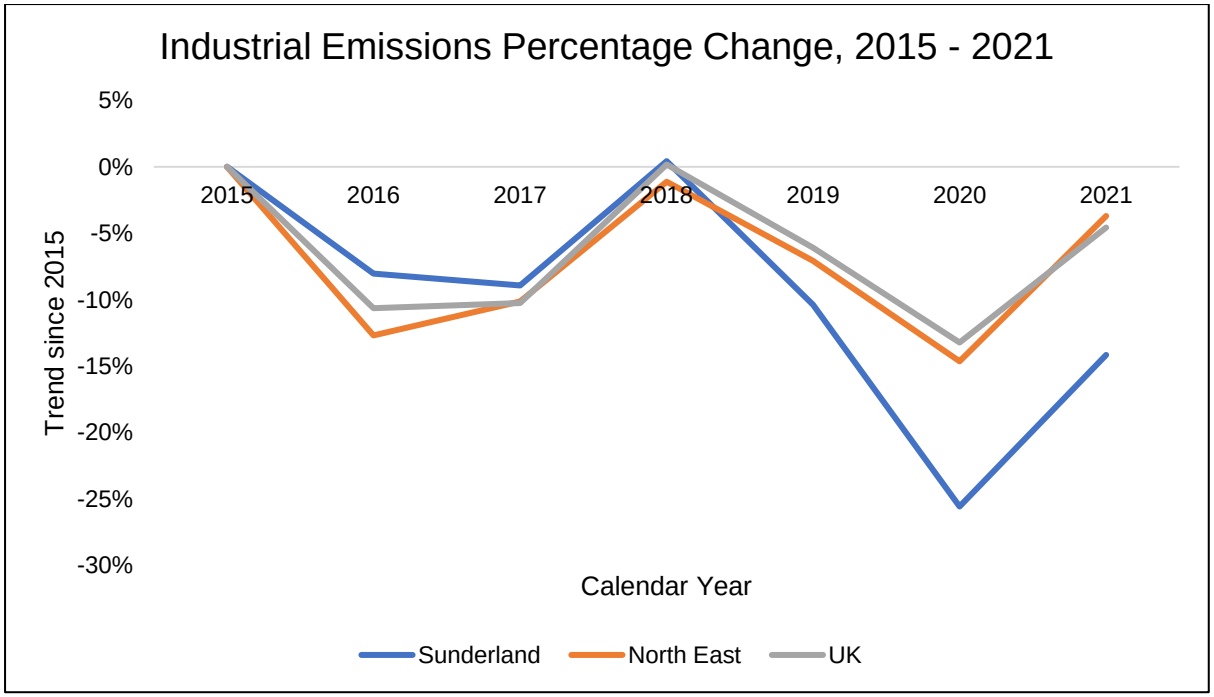

Figure 18 – Annual decarbonisation trend for industrial emissions since 2015 for Sunderland, the North East and the UK

5.3. Commercial emissions

5.3.1. Figure 19 shows how the commercial sector is performing against its target, when apportioned against an equal share of the carbon budget reduction target (against the 2015 baseline). Emissions from the commercial sector in 2021 increased by 15% compared to 2020 (when the sector's activity was impacted by COVID-19) and the commercial sector is ahead of its apportioned 2021 target for decarbonisation, decarbonising more successfully than all other sectors. Reductions have been driven by electricity, with a 77% reduction since the 2015 baseline. Gas and other commercial emissions have also

decarbonised since the 2015 baseline, with emissions reductions of 49% and 15% respectively.

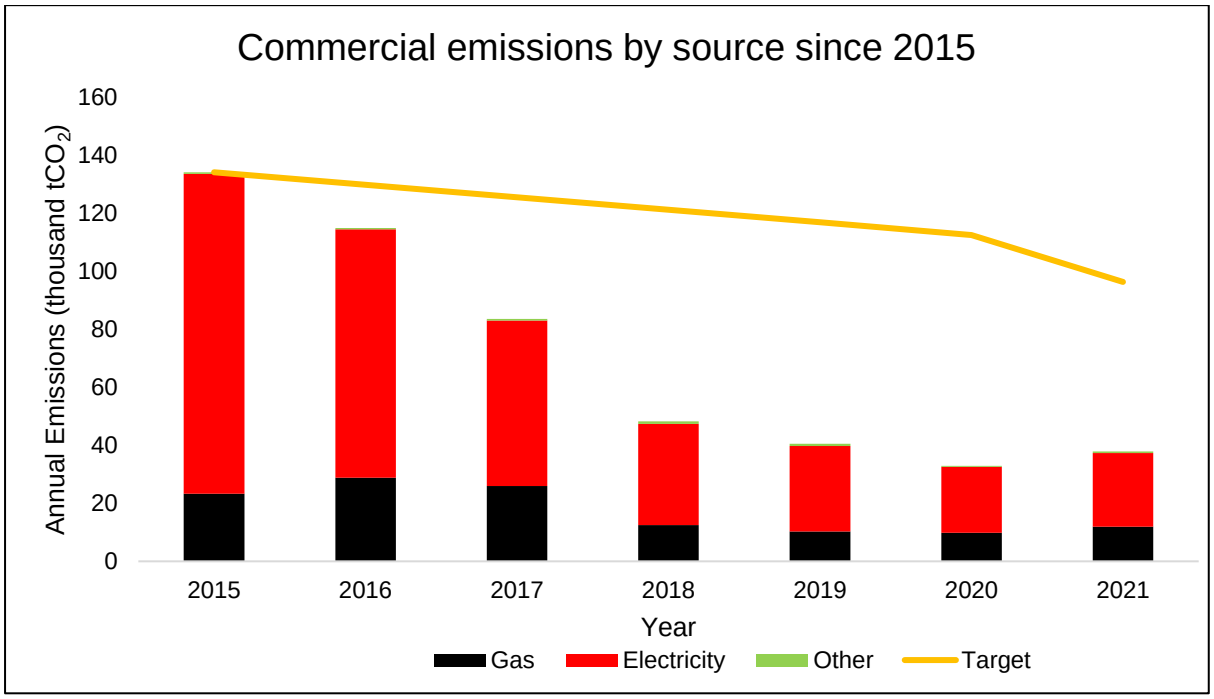

Figure 19 - Commercial emissions by source and progress comparison against an equal share of the carbon budget

5.3.2. In relation to comparison data, as can be seen in figure 20, 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. Like both the regional and national trend, Sunderland's commercial emissions were lower in 2021 compared to 2019. It is likely changes in working patterns to introduce hybrid approaches within the commercial sector following the pandemic will influence future emission levels.

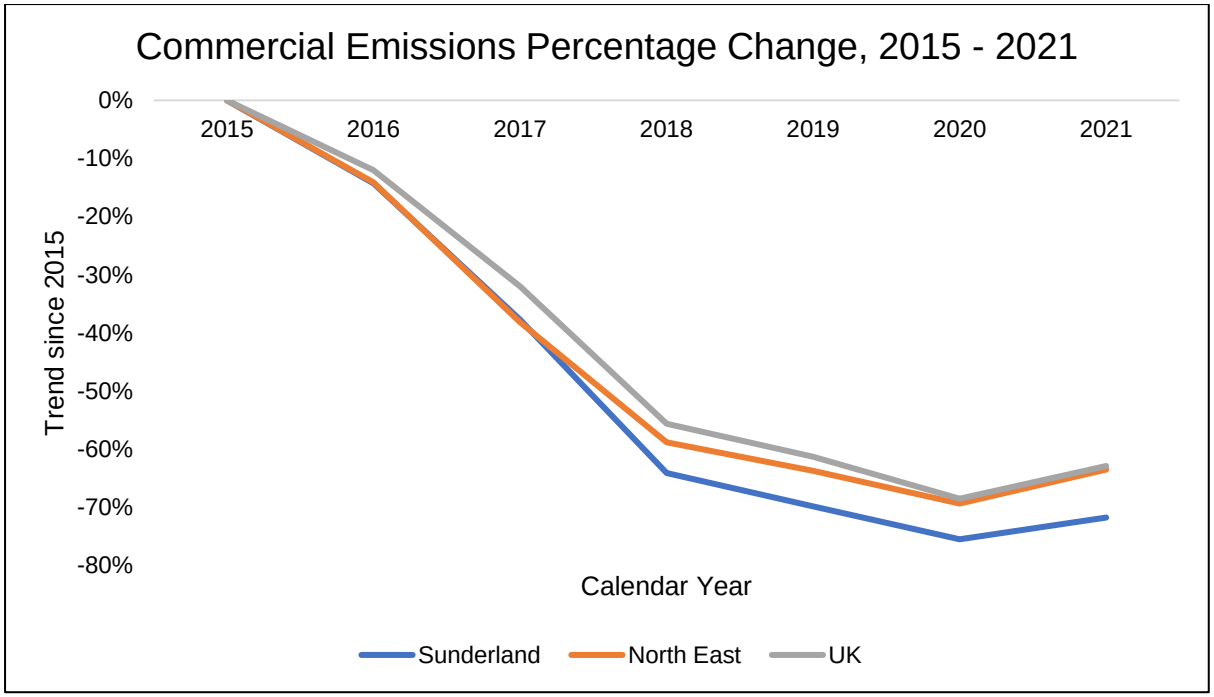

Figure 20 - Annual decarbonisation trend for commercial emissions since 2015 for Sunderland, the North East and the UK

5.4. Public sector emissions

5.4.1. Figure 21 shows how the public sector is performing against its target, when apportioned against an equal share of the carbon budget reduction target (against the 2015 baseline). Emissions from the public sector in 2021 increased by 11% compared to 2020 (when activity was impacted by COVID-19) and the public sector is behind its apportioned 2021 target for decarbonisation. Like both the regional and national trend, emissions from the public sector were higher in 2021 compared to 2019. Reduced electricity consumption combined with the decarbonisation of National Grid electricity has led to a 30% reduction since the 2015 baseline. However, decarbonisation progress in the public sector has been counteracted by increases in emissions from gas, which have increased by 29% since the 2015 baseline. Other emissions in the public sector have decreased by 98% since the 2015 baseline, however these emissions make up a finite proportion of the overall total. Therefore, the public sector generated more emissions than in the 2015 baseline.

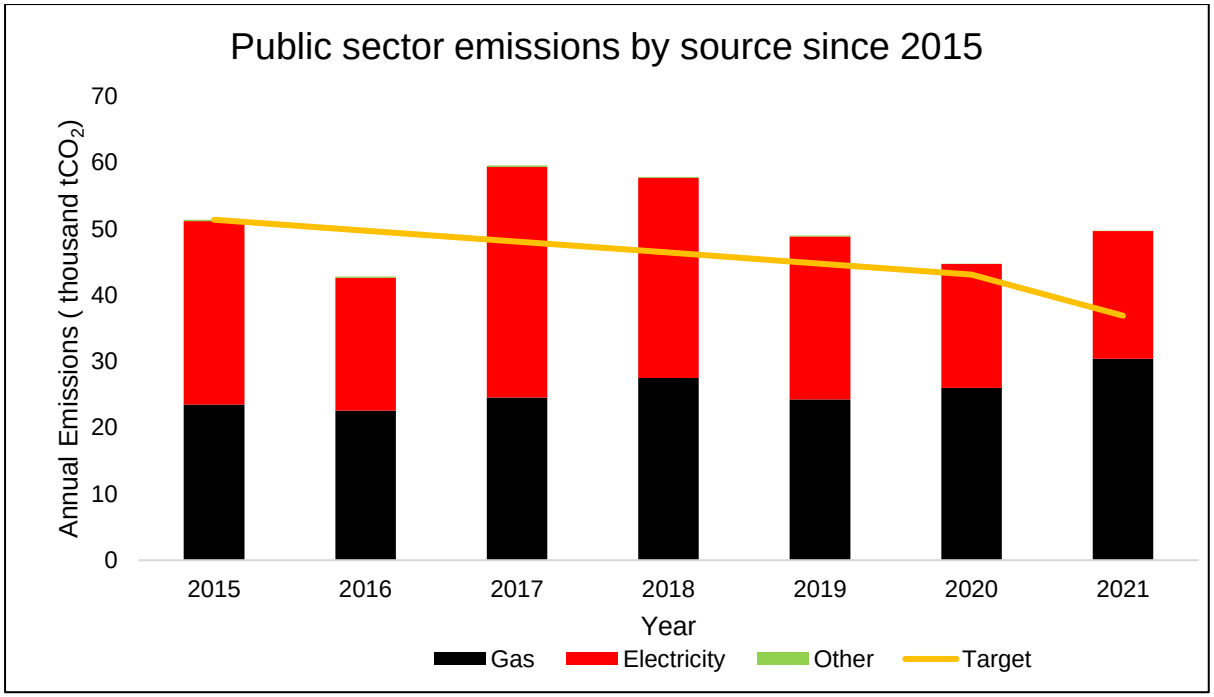

Figure 21 - Public sector emissions by source and progress comparison against an equal share of the carbon budget

5.4.2. Finally, as can be seen below in figure 22, the current rate of decarbonisation within the public sector is slightly higher than the average for the UK overall but lower than the North East regional average.

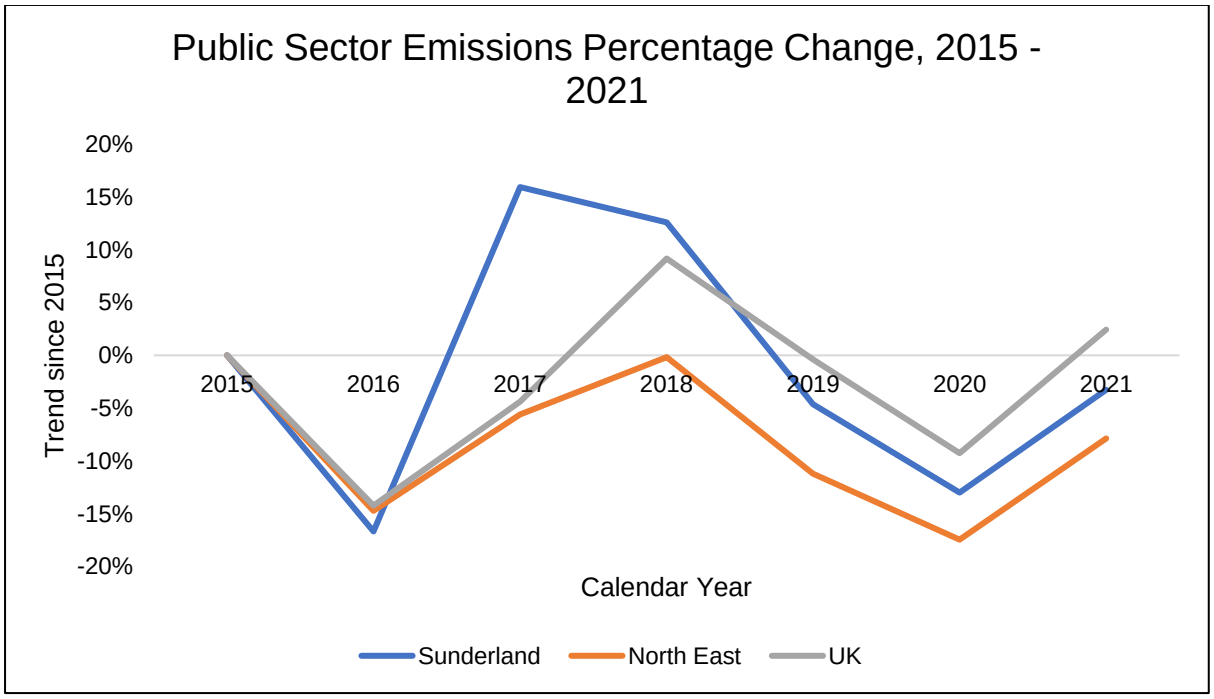

Figure 22 - Annual decarbonisation trend for public sector emissions since 2015 for Sunderland, the North East and the UK

5.5. Domestic emissions

5.5.1. Figure 23 shows how the domestic sector is performing against its target, when apportioned against an equal share of the carbon budget reduction target (against the 2015 baseline). Emissions from the domestic sector in 2021 increased by 3% compared to 2020 and the domestic sector is behind its apportioned 2021 target for decarbonisation. Reductions have been driven by electricity, with a 48% reduction since the 2015 baseline. Emissions from domestic gas were 1% higher than the 2015 baseline. Other domestic emissions have reduced by 17% compared to the 2015 baseline.

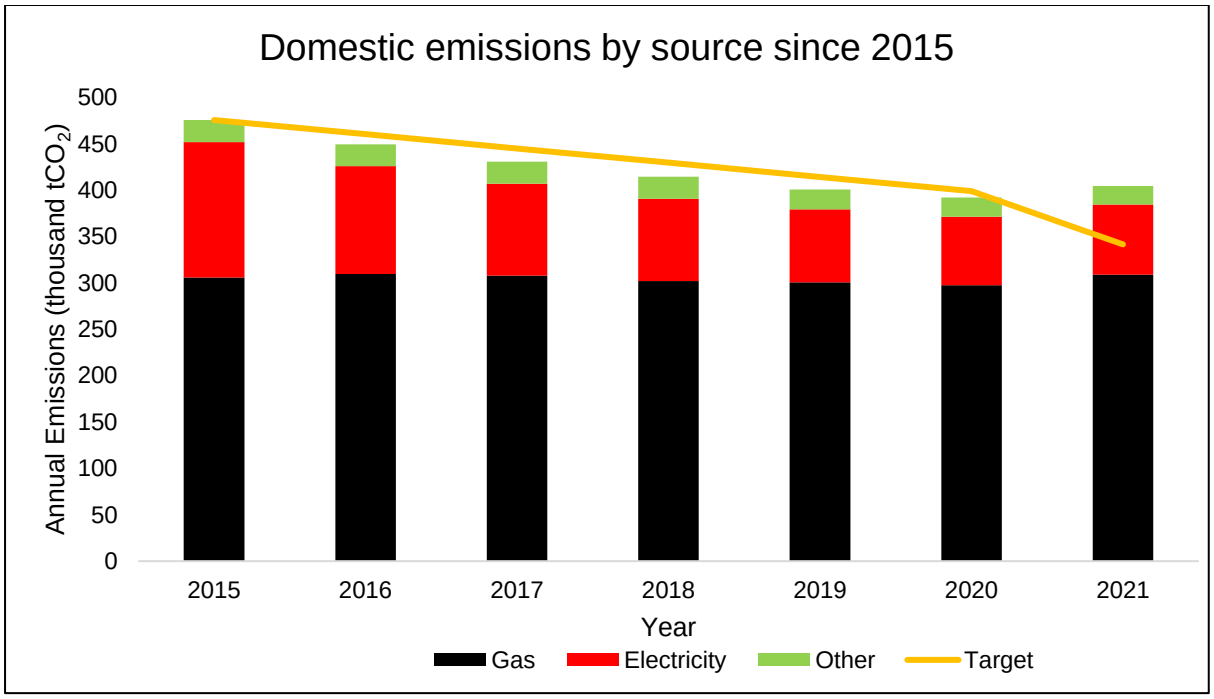

Figure 23 - Domestic emissions by source and progress comparison against an equal share of the carbon budget

5.5.2. In relation to comparison data, as can be seen in figure 24, the domestic sector has decarbonised at a faster rate than both the North East and national average. The increase in emissions from this sector from 2020 to 2021 follows both the regional and national trend. Like the regional and national trend, annual domestic emissions were also higher in 2021 compared to 2019.

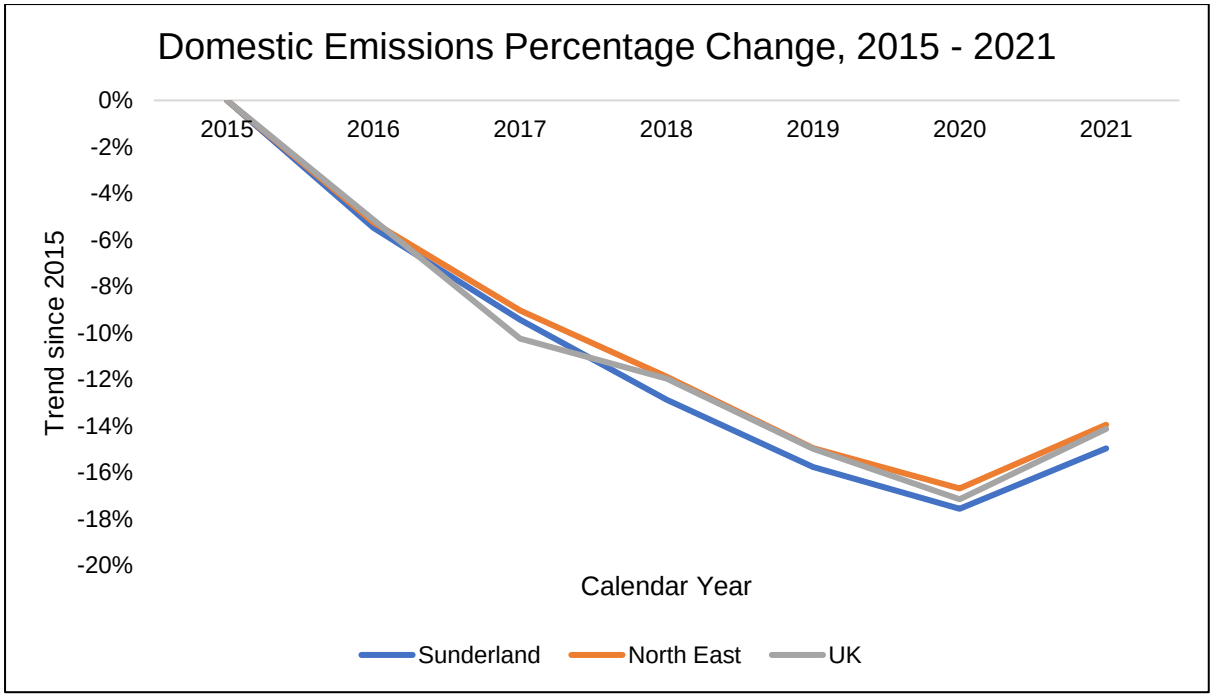

Figure 24 - Annual decarbonisation trend for domestic emissions since 2015 for Sunderland, the North East and the UK

5.6. Transport emissions

5.6.1. Figure 25 shows how the transport sector is performing against its target, when apportioned against an equal share of the carbon budget reduction target (against the 2015 baseline). Emissions from the transport sector in 2021 increased by 2% compared to 2020 and the transport sector is behind its apportioned 2021 target for decarbonisation. Emissions from A roads and minor roads have decreased by 21% and 16% respectively since the 2015 baseline, however this has not been at the pace required to meet the carbon budget apportioned target for the transport sector. Other transport emissions have risen by 0.4% since the 2015 baseline.

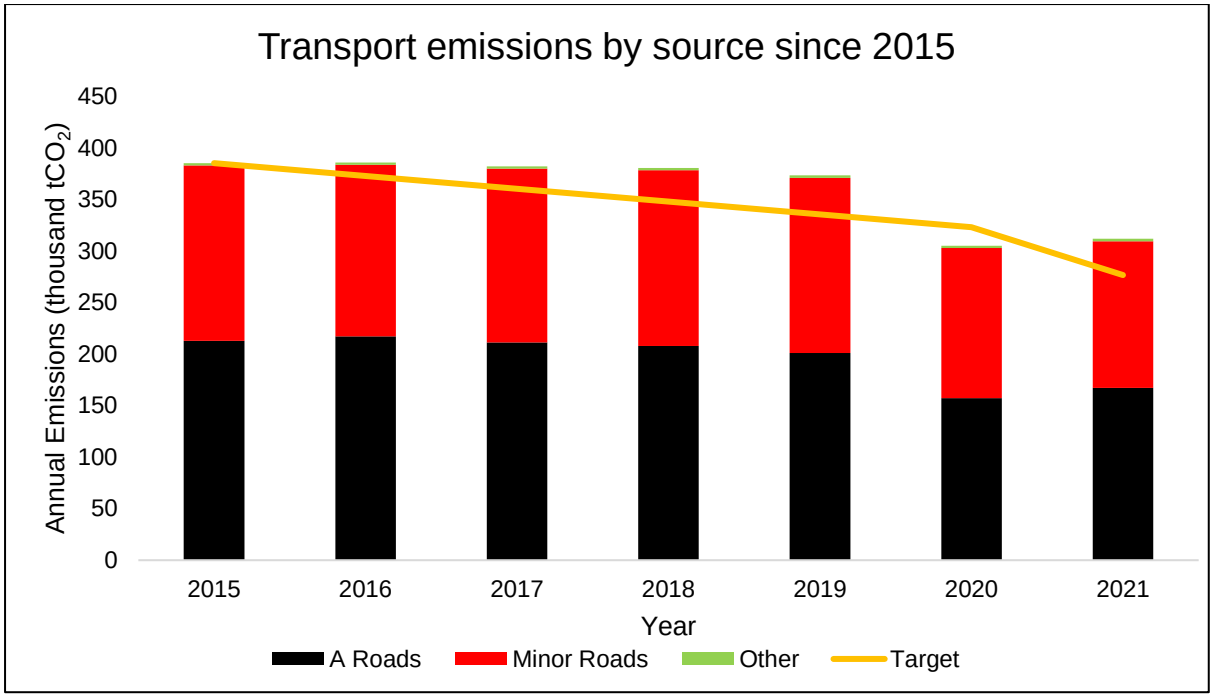

Figure 25 - Transport emissions by source and progress comparison against an equal share of the carbon budget

5.6.2. In relation to comparison data, as can be seen in figure 26, the transport sector has decarbonised at a faster rate than both the North East and national average. The increase in emissions from this sector from 2020 to 2021 follows both the regional and national trend and reflects the impact of COVID-19. In addition, like the national and regional trends, emissions from transport remained significantly lower in 2021 compared to 2019. However, it is also notable that the rate of carbon emissions increases during the previous year rose at a lower rate than the North East and national average.

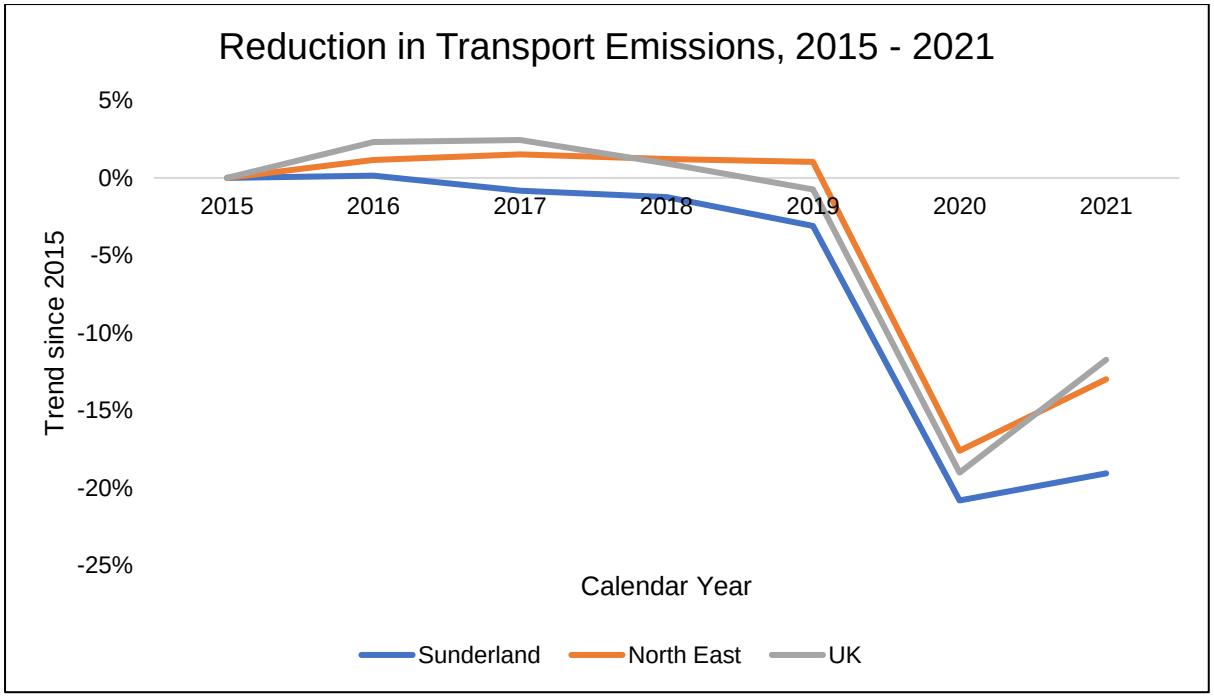

Figure 26 - Annual decarbonisation trend for transport emissions since 2015 for Sunderland, the North East and the UK

5.7. Agriculture emissions

5.7.1. Figure 27 shows how the agriculture sector is performing against its target, when apportioned against an equal share of the carbon budget reduction target (against the 2015 baseline). It should be noted that emissions from this sector within the city (at less than 1% as shown in Figure 16 – section 5.1.1) are very low compared to all other sectors. Emissions from the agriculture sector in 2021 increased by 7% compared to 2020 and the agriculture sector is behind its apportioned 2021 target for decarbonisation. Except for 2016 and 2020, emissions from agriculture have been rising in Sunderland, a 45% increase in emissions from electricity, a 619% increase in emissions from gas and a 2% decrease in emissions from other sources.

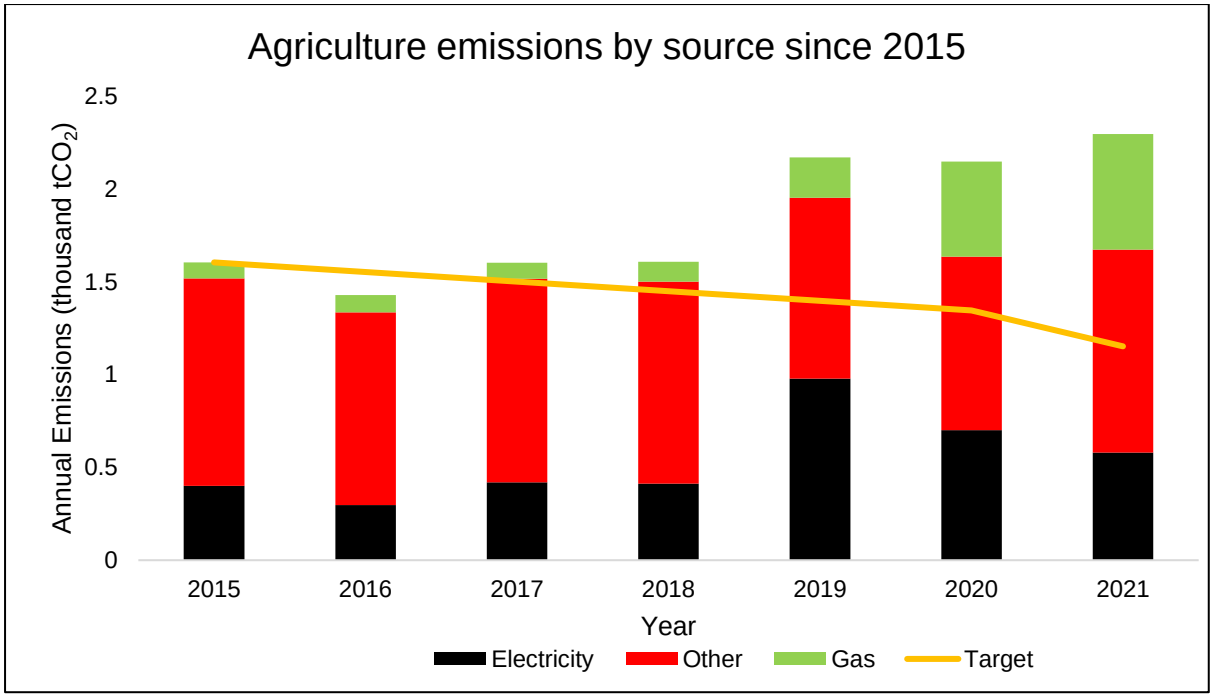

Figure 27 - Agriculture emissions by source and progress comparison against an equal share of the carbon budget

5.7.2. In relation to comparison data, as can be seen in figure 28, the agriculture sector has become more carbon intensive than both the North East and national average.

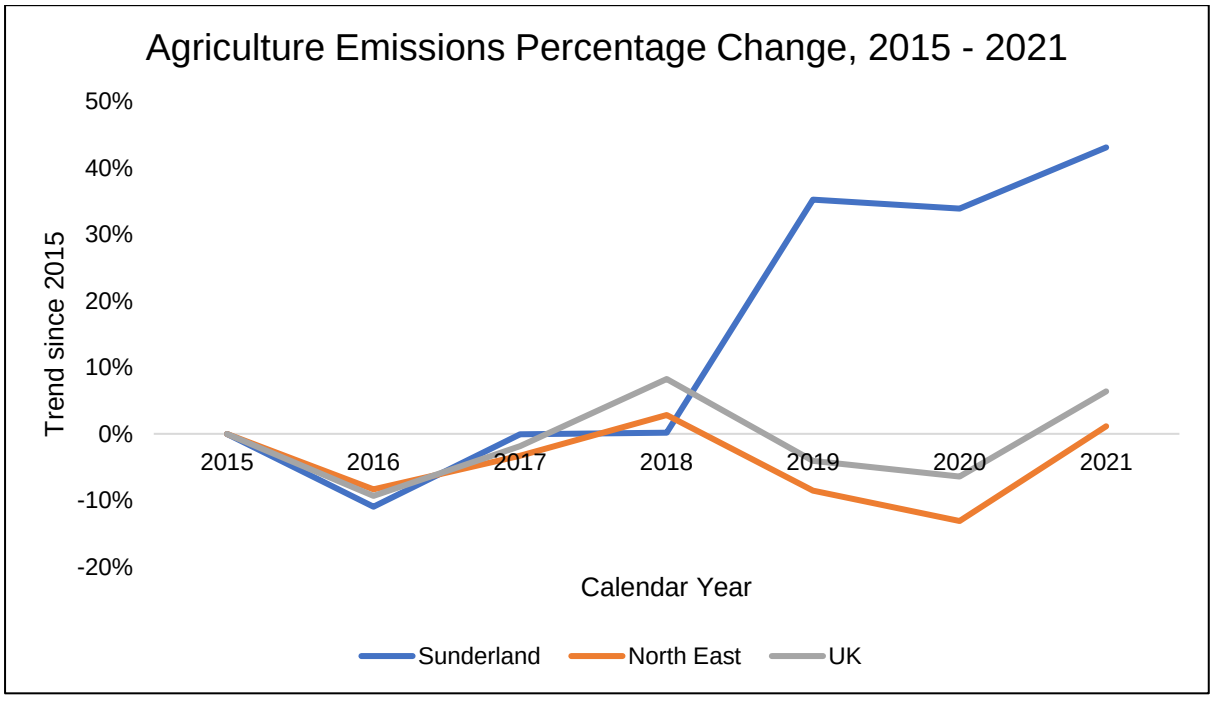

Figure 28 - Annual decarbonisation trend for agriculture emissions since 2015 for Sunderland, the North East and the UK

5.7. Waste management emissions

5.7.1. DESNZ produce emissions from waste management data which covers landfill and 'other' waste management as separate categories, however, excludes landfill as 'in scope' for the local authorities' emissions. Therefore, only data for 'other' sources is included within the citywide carbon inventory. Like with the agriculture sector, it should be noted that emissions from this sector within the city (at less than 1% as shown in Figure 16) are very low compared to all other sectors. Figure 29 shows how the waste management sector is performing against its target, when apportioned against an equal share of the carbon budget reduction target (against the 2015 baseline). Emissions from the waste management sector in 2021 increased by 0.4% compared to 2020 and the waste management sector remains behind its apportioned 2021 target for decarbonisation.

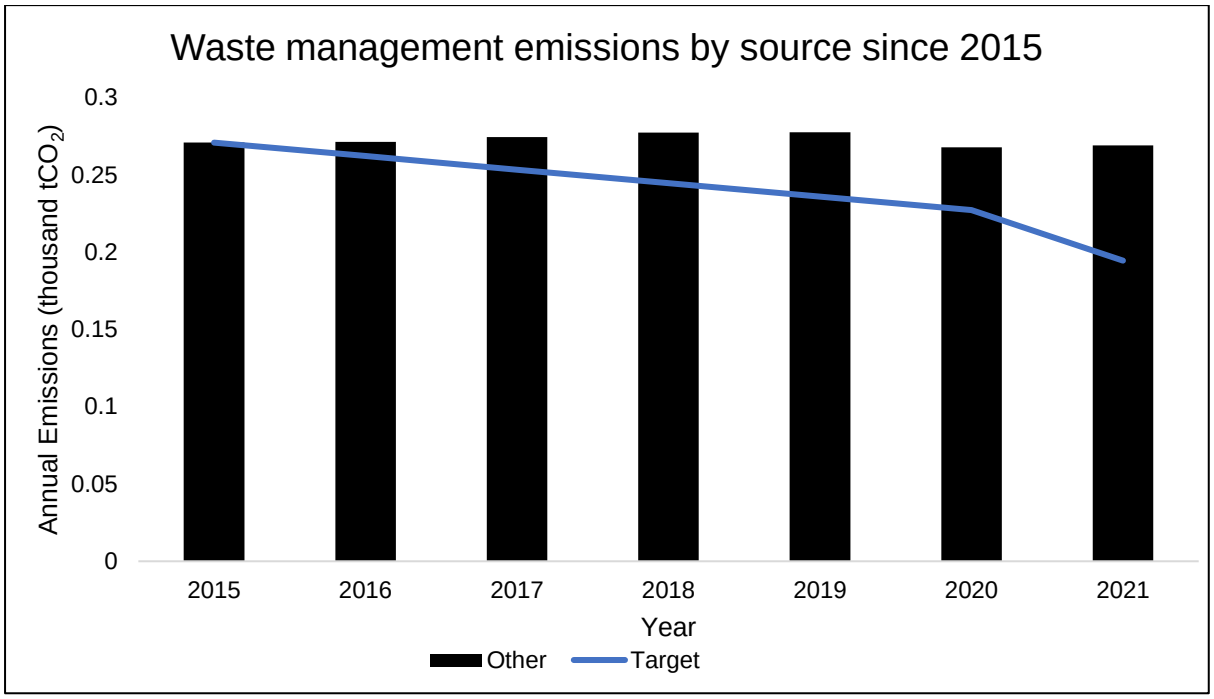

Figure 29 - Waste management emissions by source and progress comparison against an equal share of the carbon budget

5.7.3. In relation to comparison data, as can be seen in figure 30, the waste management sector is performing better than both the North East and national average. The increase in emissions from this sector from 2020 to 2021 follows both the regional and national trend, however the rate of increase in Sunderland is significantly lower.

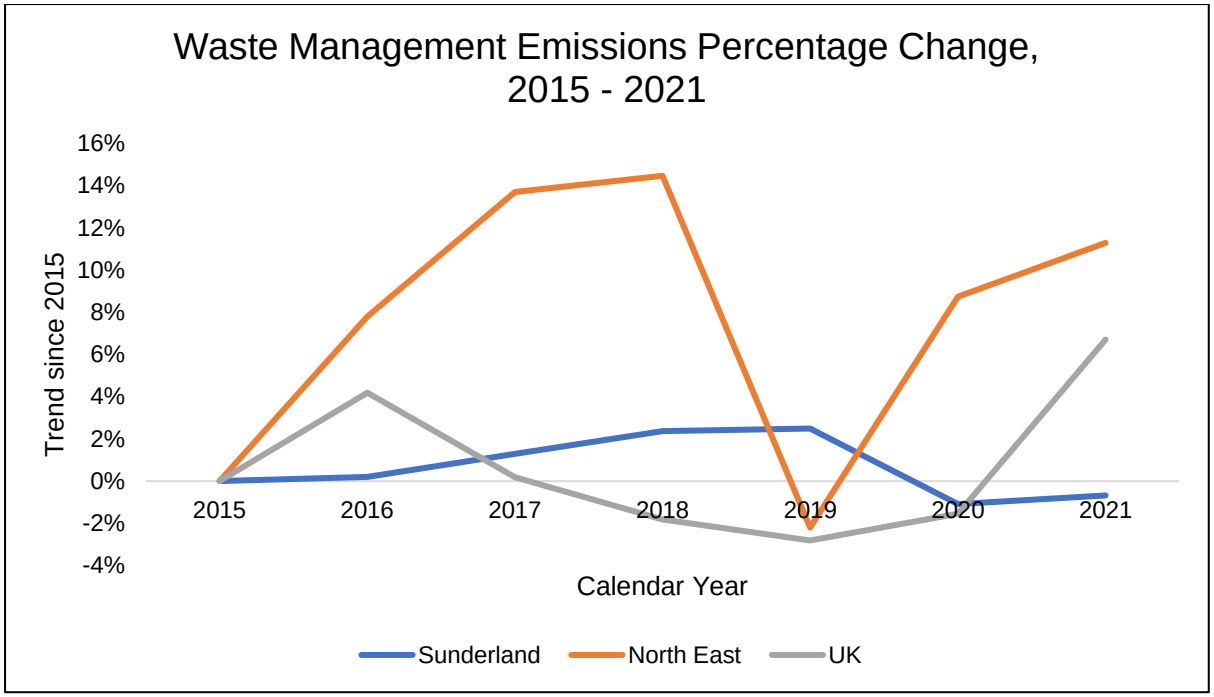

Figure 30 - Annual decarbonisation trend for waste management emissions since 2015 for Sunderland, the North East and the UK

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

5.8.1. Net carbon sequestration from the LULUCF sector experienced a 1% increase in 2021 from 2020 levels (an increase from 100 tonnes to 101 tonnes). In data releases from previous years, DESNZ predicted that settlements (a net emitter in the LULUCF sector) would emit lower levels of CO_2 than in the 2021 data release, with data from previous years also being revised. Therefore, net sequestration from LULUCF appears significantly lower in this annual report than the previous report for 2021-22. LULUCF was a net emitter until 2015, when net sequestration from grassland and forestland became higher than net emissions from settlements and cropland. With exceptions in 2016 and 2018, this trend is gradually continuing, with net sequestration in 2021 being the second highest on record since 2005, after 2017.

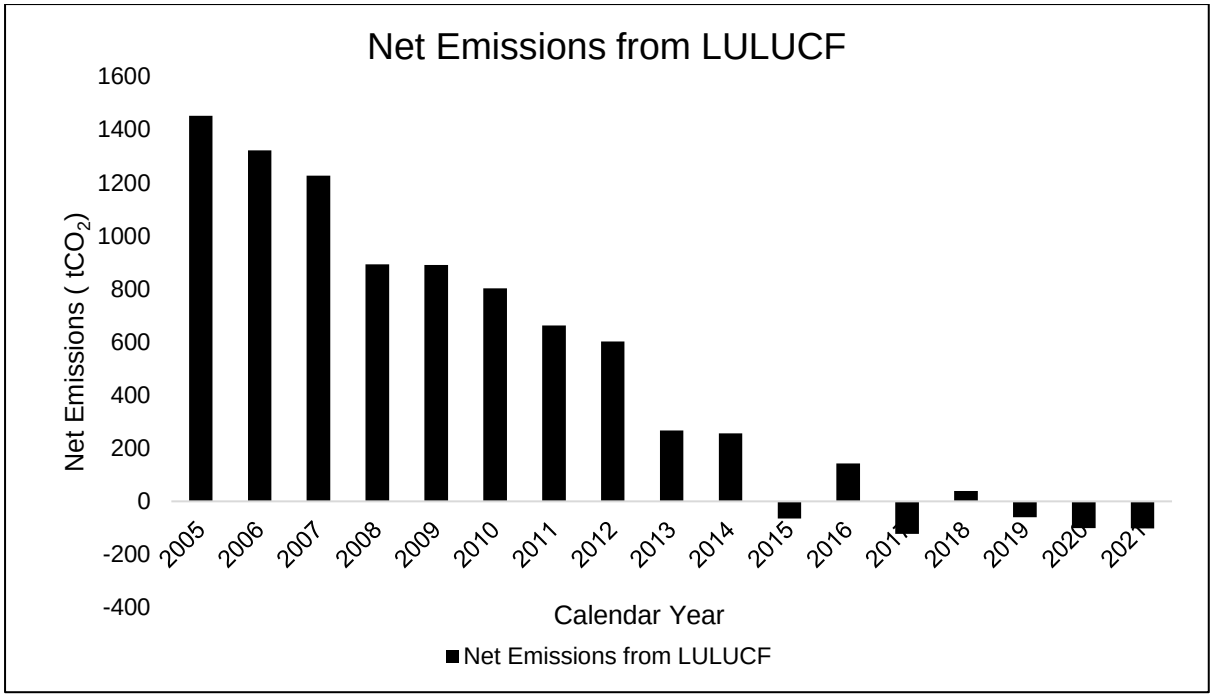

Figure 31 - Net emissions from LULUCF in Sunderland, 2005 – 2021

5.8.2. Since 2015, decreases in net emissions and increases in net sequestration from the LULUCF sector have mainly been driven by sequestration from grasslands and decreases in net emissions from settlements. Conversely, net emissions from cropland have been increasing and although the highest net sequester of carbon, sequestration from forestland has been declining. It is hoped that tree planting initiatives such as the North East Community Forest (further discussed in section 6) will help to mitigate this decline. These trends all continued from 2020 to 2021, with the exception of grassland, which sequestered slightly less carbon than the previous year. Net emissions from each source are shown on figure 32.

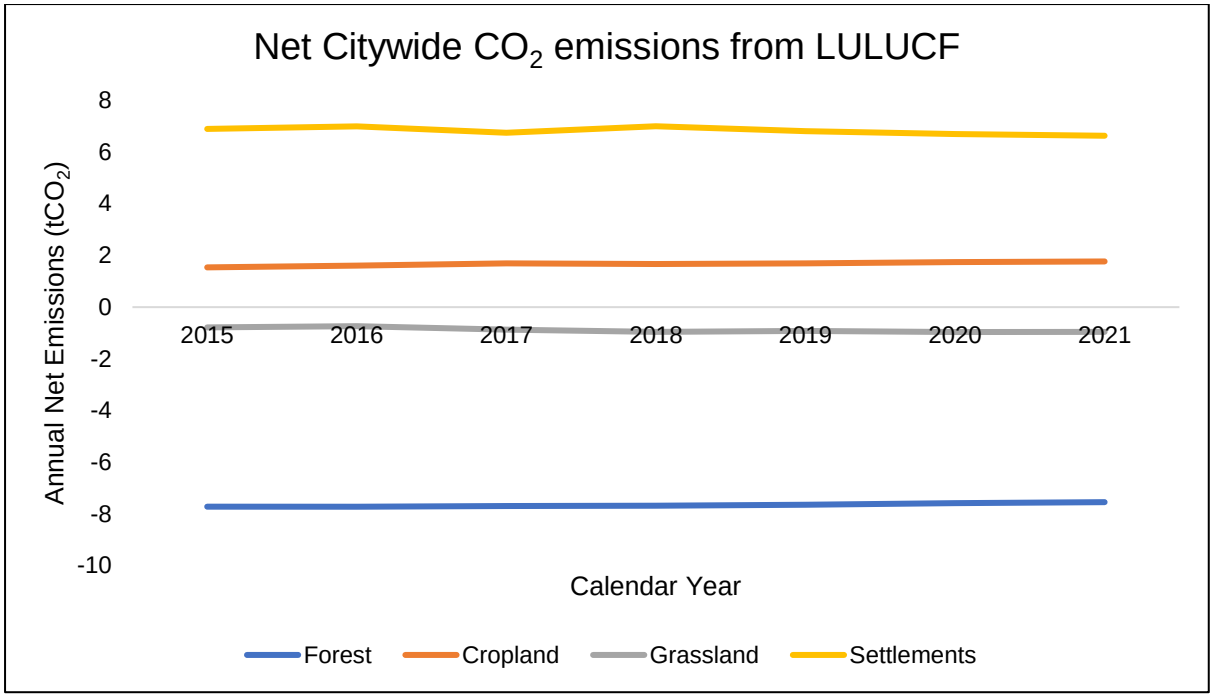

Figure 32 - Net emissions in the LULUCF sector by source

6. Key Areas of Activity and Progress

6.1. Our Behaviour

6.1.1. Activity in this area includes engagement work across 6 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. The Low Carbon Engagement Plan is a dynamic working document to shape engagement activity. It identifies a series of key target groups: residents; children and young people; Voluntary Community Sector; Sunderland City Council employees; partners locally, regionally, nationally and internationally; 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.

Residents

6.1.3. Communications has a key role to play within the 'Our Behaviour' strand. An annual communications plan has been designed which includes opportunities for engagement to ensure regular content is created and shared to a variety of audiences and using a range of media and channels. From this flows a monthly social media programme using the citywide #Wearsustainable hashtag and focused on international/national/local initiatives in relation to climate change, and sustainability in addition to internal communications activity to engage with employees.

6.1.4. 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 website was revised and updated to be more engaging in 2022/23 with designed sections for specific audiences. 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). During the last quarter of 2022/23 the website was receiving 50% more individual visitors compared to the previous quarter and its bounce rate had decreased by 0.39% to sit at 36.3%, telling us that more visitors are spending meaningful time on the Low Carbon pages.

6.1.5. As part of the planned communications activity, several key campaigns have been developed including 'We Love Cities' (autumn 2022) and a Christmas 2022 campaign around sustainable festivities focused on an Eco Elf sharing tips.

6.1.6. Having been shortlisted as a national finalist in the WWF One Planet City Challenge (following our 2021 CDP submission), Sunderland participated in the 'We Love Cities' campaign in November 2022. '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.

Sunderland developed a communications plan to ensure the campaign was widely shared in a range of formats and promoted other activities to sit alongside it (such as school poster competitions with finalists displayed in the city). Sunderland also worked with a diverse range of partners to ensure maximum engagement in the campaign, including the EGS group (children and young people) and attending events such as EcoFest and visiting local libraries. The campaign was also presented at the 2030 Shadow Board with partners from all sectors committed to its rollout. Overall, Sunderland received clicks from thousands of individual voters and received 138 written responses in the 'We Love Cities' campaign; key topics of importance to residents included transport emissions, active travel and connectivity, alongside planting more trees, plants and shrubs, as well as tackling litter and increasing recycling.

6.1.7. Ecofest Sunderland was held for the first time in October 2022, developed in partnership with Climate Action North based at the Business Innovation Centre and the city's Business Improvement District (BID). 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, e-scooters 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 a mini-market event at the Bridges which took place over two days, bringing a series of traders with sustainable goods to the city for the first time. The second Eco-fest is currently planned for October 2023, with two separate events over two days – 12th and 14th October. The event on the 12th October is aimed at bringing local sustainable business together in a series of workshops and sessions as part of the Sunderland Business Festival. The fun day on the 14th October is aimed at residents, families and children, in partnership with local community groups to raise awareness of low carbon and sustainable topics.

6.1.8. Over the course of the year, as well as EcoFest, the Low team have taken part in a wide range of engagement events to raise awareness in communities across the city around low carbon, sustainable behaviours, Sunderland's newly launched Refill scheme, and active travel. These included Together for Children's Health and Happiness week with events at Thompson Park, Hudson Road, Farringdon Academy, Hetton Lyons Country Park, Southwick Community Primary School and Princess Anne Park as well as an event for children and young people with Special Educational Needs and Disabilities at Barnwell Academy during the 2022 summer holidays. Further examples include Freshers' Fair at the University (September 2022) and events at Sunderland College (freshers' events and college roadshows at Bede and City campuses in March 2023) and a Christmas upcycling and recycling event at the Museum and Winter Gardens (December 2022).

6.1.9. Representatives from University of Third Age (U3A) have also been involved in low carbon discussions (in May 2022), including an event hosted in City Hall to share information on Low Carbon work across Sunderland to help engage and with a particular focus on recycling.

<u>Children and young people</u>

6.1.10. The Environmental, Green and Sustainable (EGS) young people's group (launched in October 2021) continues to grow and meet quarterly. EGS brings together young people from primary, special, and secondary schools alongside reps from Sunderland Youth Council, young people's minority forums, detached youth work settings, Sunderland College, and the University of Sunderland to

provide a forum where young people's opinions regarding climate change can be heard. The group was developed by young people and is inclusive. Members are supported to meet and discuss climate action; participate in Low Carbon volunteering opportunities; and feed into the city's plans. During 2022/23 EGS members have continued to send representation to every 2030 Shadow Board meeting and to contribute to group discussions.

6.1.11. This year EGS have taken part in a range of discussions with invited speakers including Seascapes and Durham Wildlife Trust as well as Council officers. They have also taken part in a wide range of activities in 2022/23, including consultations, co-design, and volunteering. This includes action regarding sustainable waste such as volunteering in a gardening project at St. Peter's 'A Space 2 Grow' site in June 2022 and undertaking a group litter pick at the seafront in March 2023. In February 2023, the members also worked with Together for Children to design a plastic-use survey which was shared with all Sunderland schools and the group subsequently launched a young people's poster competition to encourage visitors to be responsible with waste at the coast with winners to be displayed in Roker and Seaburn once judged by a panel including the EGS group themselves. The EGS group has also helped to shape Sunderland's new Food and Nutrition Charter Mark's silver and gold levels for schools, fed back on the content proposed for the MySunderland.co.uk website's Low Carbon pages, and contributed to the development of a sustainable travel app for the city.

6.1.12. Following discussions with WWF during 'We Love Cities' competition the Leader of the Council was asked to speak at a hybrid COP27 event to showcase the work of the EGS in particular in a panel entitled 'Long-term public engagement in ambitious climate policies'.

6.1.13. During COP27 Sunderland City Council launched a new initiative called Sunderland Climate Friendly (CF) Schools to support Sunderland's schools, children and young people to have the knowledge, confidence and skills required to drive the city's low carbon ambitions forward. This is a two-year programme which will be delivered by Outdoor and Sustainability Education Specialists (OASES) and aims to improve environmental literacy and support schools to take action in tackling climate change, with 10 schools being selected to take part in the project.

6.1.14. All 10 CF schools (including some from each Area of the city and a mix of primary, special and secondary schools) have worked closely with OASES staff and the Low Carbon Team to complete a school audit; set up a climate action team; develop actions; complete a whole-school assembly; and undergo training for teaching staff and governors. The schools will receive Climate Friendly Schools status when the 10 actions they have identified for year one have been completed. School actions are based around 7 climate friendly themes: energy, transport, building, water, food, consumption, and grounds.

Examples of the carbon-cutting actions the schools are taking forward include growing vegetables, introducing children to possible future careers in the green economy, promoting a uniform swap shop, installing a water butt to harvest rainwater, creating an energy saving campaign in school, investigating renewable technologies to install and planting trees.

6.1.15. In 2022 a Sunderland Climate Friendly Schools network was also formed, which meets termly and is open to all schools. The network cascades information and signposts support and good practice is shared amongst peers – the first two meetings were held during 2022/23 and focused on Energy (November 2022) and Food (June 2023) respectively.

6.1.16. Alongside the Sunderland Climate Friendly project, Sunderland City Council has also launched an initiative to develop a 'Wear Sustainable' resources toolkit. The development is being led by OASES with 5 Sunderland Schools (primary, secondary and special) selected to co-develop and trial the Wear Sustainable Low Carbon resources; they will then be made available later in 2023 for all key stages to learn about Sunderland's Low Carbon Journey. The resources are curriculum linked and enable young people across Sunderland to understand the city's history and heritage and transformation over time to the modern and increasingly sustainable cityscape. The 5 selected schools are the first to experience 5 new educational lessons that focus upon: the Science of climate change; Global challenges and responses to the crisis; Sunderland's carbon journey; Local Challenges and Responses; and Hopes for a climate friendly future.

6.1.17. As well as lesson plans, presentations and handouts, schools will have access to linked physical loan boxes; as well as a guided 'Wear Sustainable' trail around the city that illustrates and expands upon the lesson content and takes in local examples. The resources are in their final stage of development and refinement following feedback from the teacher scrutiny group, which took place in April 2023, after students from pilot schools had experienced the lessons and guided trail delivered by OASES staff.

6.1.18. Sunderland City Council and Together for Children has this year recruited the city's first Associate School Improvement Advisors (ASIAs) who will specialise in sustainable education and will be available to support all schools with their curriculum activities. They are working with existing schools' programmes and will be available to support all schools with their curriculum and wider school activities. As part of the work commissioned from OASES (autumn 2022 – summer 2024) to establish Sunderland Climate Friendly Schools, the ASIAs will receive training to develop their ability to support schools long-term and have been participating alongside other schools in network meetings and development of the WearSustainable resources toolkit, lesson plans, loans box and trails. The role of the ASIAs will be key to the long-term sustainability of

school engagement of this nature once the work commissioned from OASES concludes in summer 2024.

6.1.19. Free opportunities available to schools in the city continue to be circulated regularly. This includes activities organised through the regional Waste and Recycling Visitor Education Centre (covered in paragraph 6.7.4). Other carbon-cutting initiatives that have been shared with schools include the Wildlife Trust's Queens Green Canopy, school funding to achieve the Sunderland Food and Nutrition Charter Mark, the Grow Wild's Community Programme, Park That Bike, the OMEGA project (which promotes local growing, eating and healthy food through gardening and cooking in schools, run together by the Council, Together for Children and OASES) and tree planting.

6.1.20. 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 (discussed further in the Green Economy update). 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. The Service to the Environment winner amongst the 8-13 year olds was Riley Leachman for his work within his primary school parliament as well as his community action and organisation of litter picks amongst other activities. The winner in the 14-20 age category was Callum Kendray for his commitment, including through his school's Wellbeing Enrichment Club, his meetings with his local MP, his speeches on the environmental crisis and his contacting of local organisations and preparation of school assemblies. The Service to the Environment Group award went to Fatfield Academy Eco Warriors for the tireless work to reduce waste, to increase energy efficiency and to improve school grounds whilst engaging with their school and wider communities.

6.1.21. The inaugural Sunderland 60 Legacy programme was delivered by Common Purpose (a non-profit organisation which provides leadership programmes in over 200 cities globally) with Sunderland City Council as lead partners in June 2022. Sunderland Legacy brings together 18-25 year olds from citywide employers and education providers as part of an international leadership programme to work on how to make Sunderland a cleaner, greener city for generations to come. Young people were invited to participate from organisations including Together for Children, Sunderland Care & Support, Gentoo, Sunderland College, the University of Sunderland, Sunderland City Council, many of whom sponsored the programme, alongside businesses Arctic Wolf and Ashmore Consultants. Participants received training and sessions from Common Purpose as well as experts in related fields locally. They then presented their own ideas to senior representatives regarding how

they would recommend helping the city achieve its Low Carbon ambitions – these resulted in 6 strong proposals for Sunderland to consider, including:

a) develop an app, to enable residents to receive points for sustainable behaviour.
b) borough wide communication campaign to increase recycling rate and incentives to make people recycle more on the streets;
c) work with schools to develop a supplemental curriculum of 'Green Civics', aiming to educate young people basics of recycling, benefits of rewilding, and develop passions for gardening and/or agriculture;
d) organise sustainability education workshops for SMEs;
e) a big clean up event to help reduce litter; and
f) a new agreement where every new house built in the city needs to lead to 10 new trees planted, either by a housing development company or an individual.

Elements from several of these proposals are being taken forward and integrated within ongoing Low Carbon activities, such as the BetterPoints and Refill apps (idea a); increased communication on recycling and launch and promotion of the Sunderland Refill scheme to minimise single use packaging from June 2022 onwards (idea b); development of the Climate Friendly Schools programme and Wear Sustainable Resources to be rolled out to all schools later in 2023, including teaching on climate friendly citizenship (idea c); delivery by the Low Carbon team of first climate education sessions with businesses, including via Creative Fuse programme in spring 2022 and with further plans being developed for a business element to Sunderland's second EcoFest (idea d) among others.

Two of the Common Purpose alumni attended the city's next 2030 Shadow Board to share their experience and the proposed ideas they had developed and a follow-up event was held to bring the cohort together in September 2022.

6.1.22. The second Sunderland 60 event is due to take place in April 2023 and a cohort of 55 young people from organisations across Sunderland will meet for 3 days. The participants will take part in 4 immersion visits with city partners before forming 4 groups to develop their own ideas.

6.1.23. Sunderland City Council (in partnership with German twin town Essen) secured funding from North Rhine Westphalia and Stadt Essen and provided match funding 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 with both groups of learners, a webinar and joint project work. The project culminated in June 2022

with a visit of 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, and exploring local sustainable sites in Essen including an energy exhibition and joint student-led projects.

Voluntary Community Sector

6.1.24. Regular information and updates on local Low Carbon plans and activities as well as regional and national events and opportunities continue to be regularly shared with VCS partners, notably the Voluntary Sector Alliance, and cascaded widely. Opportunities shared have included funding streams; highlights in the environment calendar; tree planting events; waste and recycling initiatives; and promotion of the Betterpoints app.

6.1.25. VCS organisations have worked with the Low Carbon team and partners on a range of activities, including participating in EcoFest; supporting public tree planting events; facilitating gardening sessions for the EGS group; and recruiting Refill stations and promoting the app's use.

6.1.26. The VSA has worked with businesses across the city to recruit corporate volunteers and coordinated the participation of tens of corporate volunteers committing hundreds of hours to environmental projects locally including gardening; tree planting; litter picking and beach cleaning.

6.1.27. The VSA has also worked to promote the energy efficiency grants available to VCS organisations via Sunderland's BREEZ programme (referenced below in 6.3.11).

6.1.28. The Low Carbon team has also attended each of the city's 5 Neighbourhood Community Boards to work with elected members and officers on linkages between plans and Low Carbon strategic priorities and to identify future opportunities for cooperation.

Employees

6.1.29. In March 2023 Sunderland City Council launched a new Green Champions programme for employees. Early activities have included recruitment of interested volunteers at three staff events, where the Council's and city's Low Carbon ambitions, framework and plans have been shared as well as information on specific Low Carbon topics. The group continues to meet and identify potential sustainability improvements in Council operations. It is also connected to the newly-launched City Hall tenants' Green Champions network.

6.1.30. In March 2023 the Council's Assistant Director for Economic Regeneration delivered a presentation to all employees as part of a Chief Executive briefing on the city's Low Carbon journey so far (reaching 550 members of staff), ending this session by encouraging further take up of Green Champion Volunteers. A second presentation was delivered with the Council's Senior Management Team in April 2023. Low Carbon continues to feature regularly in staff newsletters, Teams Cards and on the Hub as well as being the focus of many Yammer posts.

Partners

6.1.31. Sunderland partners and German twin town Essen (European Green Capital Agency and Stadt Essen) continued their cooperation in the field of climate action through Engagement Global's 'Urban Diplomacy Exchange' programme. One of several Anglo-German partnerships to be selected and funded to explore the Sustainable Development Goals, Sunderland and Essen colleagues took part in online joint sessions (Dec 2022 onwards) to explore how to use their twinning relationship to work towards several of the SDGs (notably 11, 16 and 17). Essen and Sunderland both committed to participation in a joint conference in Leeds (June 2023) where they will explore environmental and social sustainability alongside other partnerships and share good practice in this area. Sunderland is also due to host an Essen colleague for an in-depth visit which will focus on showcasing some of the city's activity in this field (June 2023).

Businesses

6.1.32. The Low Carbon team is working closely with the Business Investment Team to take forward activities to support and engage local businesses. During this reporting year, initial work included development and distribution of a range of Low Carbon business fact sheets as well as dedicated pages on the MySunderland low carbon website.

6.1.33. Local businesses continue to be updated regularly with information and opportunities within the city, including installation of cycle racks, sustainable travel planning for workplaces, EV Charging point installation, funding for retrofitting and energy efficiency, sustainability awards, initiatives such as Refill, events including EcoFest. During 2022/23 Council teams have put in place routes to cascade information via a range of organisations, networks and partnerships working with businesses.

6.1.34. The Council's Low Carbon team is also contributing to business support in sustainability, such as the Creative Fuse 'Sustainable Cities innovation lab' programme with the University of Sunderland to support SMEs within the creative and cultural sectors as well as beginning plans to develop the city's

first Eco Fest sessions for businesses to take place later in 2023. A fuller update on this activity will be covered below under SP6 The Green Economy.

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. 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 adapting the natural environment and green infrastructure, not only in terms of seeking more carbon storage and sequestration but also ensuring that the city is more resilient to the impacts of climate change.

6.2.2. In November 2022 the Council's Deputy Leader attended the UK100 Climate Leadership Academy for Councillors which provided an opportunity to develop skills, knowledge and confidence in relation to climate change to become a leading climate pioneer in local government.

Reporting

6.2.3. As set out in section 3 of this report, the Council discloses to CDP (formerly Carbon Disclosure Project) on an annual basis. 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. 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. The Council committed to submitting annual citywide environmental data to CDP in 2021 and has previously disclosed data twice. In 2022, Sunderland received its second 'A' Grade (Leadership Status) for the submission. The city is currently 1 of 19 in the UK and 1 of 123 globally to receive this recognition, out of over 1,000 that disclose.

6.2.4. Following feedback from the 2022 CDP disclosure, the Low Carbon Team has also commenced initial preparatory work to draft a climate adaptation plan which will be important to strengthen adaptation commitments and action in the city. The Sunderland Good Food Partnership has also joined the Sustainable Food Places Network by becoming an accredited partnership, following a CDP-based recommendation to progress work in this area. The Council submitted its third disclosure to CDP in July 2023 and is awaiting the result and feedback.

Plans and Policies

6.2.5. The Council's Business Continuity and Strategic Framework plan was reviewed in May 2023 with input from the Low Carbon Team. The plan now clearly recognises the growing threats of climate change to business continuity and states as an action that the Council needs to build up its resilience to severe weather impacts and prepare for climate change to minimise disruption or costs associated with damage to properties, declining productivity, illness and accidents, changes to prices or availability of raw materials, changes in the availability and cost of insurance, and impact on global supply chains.

6.2.6. The Council's Community Wealth Delivery Plan has been refreshed and agreed, and all Area Plans have also been updated to support the citywide Low Carbon Framework and the Council's Low Carbon Action Plan. Neighbourhood and Community Boards have since been attended by the Low Carbon Team in July 2023.

6.2.7. Sunderland City Council is currently working on a joint Biodiversity SPD. A scoping report for the biodiversity SPD was consulted on in February 2020. The SPD will use locally relevant information on the distribution and abundance of species and habitats together with knowledge regarding the importance of biodiversity conservation to inform expected standards for the protection, enhancement and restoration of biodiversity. Where possible this will include building in resilience to climate change within measures taken to further these aims. The aim will also be to increase certainty on the standards of information used to demonstrate compliance with biodiversity related planning polices, where this is most appropriately included within the SPD rather than separate planning documents.

6.2.8. The SPD will also be written to complement the Local Nature Recovery Strategy (LNRS) being developed jointly by the local authorities for Gateshead, South Tyneside and Sunderland. The document will aim to provide clarity and guidance on discharging the mandatory biodiversity net gain requirement, which is due to come into force from January 2024 through national legislation. Linked with the development of the LNRS, the Council has undertaken a review of Local Wildlife Sites across the city which has included a number of amendments to existing site boundaries as well as the identification of new LWS sites for designation.

6.2.9. The Council's Green Infrastructure Delivery and Action Plan is currently being revised, to further support the delivery of nature-based solutions to help the city sequester carbon emissions and adapt to climate change impacts.

Green Infrastructure

6.2.10. Together with partners (including the Woodland Trust, the Forestry Commission, 6 Local Authorities and the North East Community Forest Team), the Council continues to progress delivery of the North East Community Forest. The NECF partnership will plant a minimum 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 canopy cover, 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.

6.2.11. During 2022/23 (the second planting season for the NECF partnership), Sunderland planted 2,000 whips; 487 street trees / public realm standard trees; 189 orchard trees; 2,412 hedge plants across; 400m of new hedgerow; 2.48ha of wildflower meadow seeding, and; 14,000 bulbs. Sunderland aims to deliver at least 13ha of new tree planting in 2023/24. This builds on the 8,462 whips, 90 orchard trees (to encourage local growing), 6,777 hedge plants across 1,360 metres of new hedgerow and 7.37ha of wildflower meadow seeding planted in 2021/22. Plans for the 2023/24 planting season are underway.

6.2.12. The City Council is delivering further tree planting schemes on a local level area, such as the Local Authority Treescapes Fund (LATF), which saw 68 standard trees delivered in 2022/23 following £70,000 being secured by the Council. This builds on success in 2021/22 to deliver 61 standard trees and 783 whips through this funding stream.

6.2.13. In March 2023 two community tree planting events took place. The first event at Downhill Sports Complex involved 15 volunteers who helped to plant over 300 trees; the second event was held at St Mary's RC primary School where 25 schoolchildren and 10 volunteers carried out a tree planting ceremony, planting 1 heavy standard tree, and 100 hedgerow whips.

6.2.14. The Link Together Development Phase project is well underway thanks to a grant of £149,462 from the National Lottery Heritage Fund (NLHF) and £20,000 match funding from Sunderland City Council (Coalfield Area Committee). Based in the Sunderland Coalfield area, Sunderland Council has partnered with the Durham Wildlife Trust, Wear Rivers Trust and Sunderland GP Alliance to deliver a project that will to help wildlife recover across 13 greenspaces. During this Development Phase, a second stage application to NLHF will be submitted in November 2023. If successful, the project Delivery Phase will start in 2024

and will last for two years. A total funding bid of just over £1m is sought from NLHF and is supported by a £20,000 'Bluespaces' grant award from Northumbrian Water, plus a further £180,000 from the Sunderland Coalfield Area Committee, £190,000 from the North East Community Forest and more than £800,000 funding from developer contributions (Section 106 funding).

6.2.15. The Council is installing living roofs on bus shelters across Sunderland, as it continues to drive green infrastructure development to enhance local biodiversity. Two new bus shelters outside the University of Sunderland and Chesters Pub on Chester Road are the first phase of a plan to install around 90 living roof bus shelters across the city as part of a new contract between Sunderland City Council and Clear Channel UK. Nicknamed 'Bee Bus Stops', living roofs have been specially designed by Clear Channel and expert ecologists to support native biodiversity, help create healthier local communities, and bring greenery back into urban areas. Each is planted with a mix of native wildflower species selected to aid and support bees and other pollinators, whose numbers are sadly in decline.

The living roofs also help provide natural cooling to counteract the effects of urban heat islands, help absorb rainwater to help alleviate flooding, and filter fine dust particles from the air. They sit atop of brand-new shelters, finished to be in keeping with the city's existing shelters, and are built using a range of recycled materials. The Royal Society of Wildlife Trusts' independent third-party ecologists have classed the living roof product as being of 'high strategic significance', saying they can make a significant contribution to delivering Biodiversity Net Gain. These 90 shelters will be among the 137 bus shelters to have green roofs installed by Clear Channel in Sunderland.

6.2.16. In addition to living bus shelters, Sunderland is also constructing living walls. Two living walls made with over 50,000 plants and spanning 6,000ft^2 have recently been unveiled in the city centre at Farringdon Row multi-storey carpark in Riverside Sunderland.

Assessments

6.2.17. The Council's Integrated Impact Assessment (IIA) has been reviewed and updated to further incorporate Low Carbon. The IIA will allow the Council to assess the predicted impacts of policies, strategies, services, projects or functions, including commissioning and decommissioning decisions. Decisions will be intelligence, insight and evidence-led, equitable, innovative and bold, and any decisions made will be taken collaboratively and with due regard to key Council commitments.

6.2.18. The Council's Joint Strategic Needs Assessment (JSNA) was revised in September 2022 and is one of the statutory functions of the Health and Wellbeing Board (HWB), working in collaboration with partners and the wider

community, to identify the health and wellbeing needs of the local population. It provides an insight into current and future health, wellbeing and daily living needs of local people and informs the commissioning of services and interventions to improve health and wellbeing outcomes and reduce inequalities.

6.2.19. The JSNA report recognises how the quality of the built and natural environment, together with factors that relate to the need for reducing carbon emissions, affect health in Sunderland. Evidence suggests, for example, that access to green spaces is beneficial to physical and mental wellbeing through both physical access and use, although in Sunderland the quality of our greenspaces is worse in deprived areas of Sunderland and is better in less deprived areas. Living within areas with low greenspace may also expose residents to higher levels of pollution and impacts from extreme weather events. In terms of the built environment, our housing and neighbourhoods need to be adapted to better cope with these weather events, ensuring effective insulation and fuel efficiency for the winter months, also helping to tackle fuel poverty, and increasingly consider cooling and shading measures needed for extreme heat. The findings of the JSNA are based on:

- Consideration of the JSNA topic summaries, which identify health, social care and wellbeing indicators, including the results of local Lifestyle Surveys.
- Comparison of our local population against regional and national averages and, in some cases, statistical neighbours which helps us to understand if a particular health issue is significant.
- A summary of local needs analysis that has been carried out, identification of effective interventions (what works) and any other rationale for action e.g., a national 'must do' or service users', carers' and public views. The Council is currently in the process of reviewing and updating the JSNA.

This overarching JSNA provides a summary of the health needs of Sunderland and highlights relevant issues for the commissioning of services.

6.3. An Energy Efficient Built Environment

6.3.1. Activity in this area focuses on decarbonising the domestic and commercial built environment, including both existing and new properties. As set out in Sections 4 and 5 of this report, emissions within the Council's buildings and citywide domestic energy 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 several areas.

Domestic Energy (Existing Buildings)

6.3.2. Through the Green Homes Grant Local Authority Delivery Phase 2 project (LAD2), Sunderland City Council completed 386 retrofit measures across 215 properties to improve energy efficiency and reduce carbon emissions in 2021/22 and early 2022/23. The total delivery cost at the end of the project was £1,738,912.04. Improvements included solar roof panels, room-in-roof (attic) insulation, top up loft insulation to 300mm, cavity wall insulation, underfloor insulation (ground floor only), air source heat pumps and heating control upgrades. The LAD2 scheme aimed to raise the energy efficiency of low-income and low Energy Performance Certificate (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 supporting the UK's commitment to net zero by 2050.

6.3.3. The Social Housing Decarbonisation Fund (SHDF) Wave 1 project was also completed in 2022/23. Following a successful £1.2m bid towards a £2.7m project led by the Council in partnership with Gentoo, the EPC rating of 400 social homes was lifted to band C. Sunderland also worked with Residential Social Landlords (RSLs) in the city to seek to develop proposals when SHDF Wave 2 launched in August 2022 with a funding pot worth £800m. Although a bid was submitted, this was unfortunately unsuccessful. Sunderland will look to promote SHDF Wave 3 among RSLs when details of the competition are announced.

6.3.4. The Council completed the ECO3 / ECO-Flex projects in April 2022. Between January 2021 and April 2022, the Council assisted 357 properties with heating and insulation measures and attracted nearly £737,000 of utility funding to support energy efficiency improvements to homes across the city through these schemes. The current ECO4 project, which runs until March 2026, will build on the Council's work to deliver ECO3, further aiming to support private sector low-income households with EPC ratings of D-G with retrofit measures, providing funding for energy-saving improvements such as insulation, heating upgrades, and renewable energy installations. The ECO4 scheme aims to take a 'whole house / fabric-first approach', initially focussing on improving insulation and reducing the need for heating.

6.3.5. Following a successful £948,143 bid in March 2022, the Council is currently delivering the Warm Homes Fund project. Lot 1 of the Warm Homes Fund project aims to fit 135 air source heat pumps in electrically heated low-income low-energy efficiency private properties. Due to a number of eligibility constraints, programme delays and lower than anticipated interest from those who would potentially benefit from the scheme, the project has, so far, delivered a very small number of complete and accredited air source heat pump installations. However, there is an increasing pipeline of interest following a refreshed approach. Lot 2 aims to deliver complementary energy efficiency advice and support targeting these properties, bringing together local organisations (Groundwork North East, Citizens Advice Bureau, as community

partners) to provide energy efficiency services, debt advice and health related programmes for up to 500 fuel poor residents. So far, the project has provided advice to 333 fuel poor residents.

Domestic Energy (New Build)

6.3.6. The Council's residential development programme will see the delivery of approximately 7,000 new homes 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 (MMC), 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 bult 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, EV 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.

Council Assets

6.3.7. After a successful bid to Phase 1 of the Public Sector Decarbonisation Scheme (PSDS1), the Council carried out heat decarbonisation and energy efficiency measures to 8 operational buildings. Works were completed in summer 2022, saving 375 tCO_2e and 1,574MWh annually.

6.3.8. Over the last 5 years, the Council has replaced over 48,000 streetlights across the city with LED lighting. Since the start of the project in November 2016, this has reduced annual energy consumption from streetlighting by over 20,000MWh, and delivered annual carbon savings of 5,370 tonnes. In addition to the street lighting replacement scheme, the Council has also delivered LED lighting to street lit signs in 2022/23. Further LED lighting upgrades to parks, associated buildings and traffic signals are ongoing and will deliver additional carbon and energy savings.

6.3.9. As part of our Planned Property Capital Maintenance programme the Council is also replacing inefficient heating systems, upgrading building fabric and installing LED lighting and sophisticated heating control systems on a phased basis.

6.3.10. Sunderland City Council undertook a £10,000 Innovation Challenge with the Digital Catapult between July 2021 – April 2022 to develop and pilot a smart

digital product which can improve the energy efficiency within Council buildings. The proposal began with two test sites and the solution was required to be scalable. Nomad Energy Solutions Ltd was the successful SME and focused its pilot as requested on the Evolve and Leechmere Centres.

6.3.11. Initially, the Council worked to provide Nomad with key information such as half-hourly data, floorplans, technical drawings and BMS. Nomad then conducted site visits to install CO_2 sensors to provide more detailed monitoring for several months. This also involved integrating the solution with BAI Communication's LORAWAN network as part of the Council's Smart City Joint Venture. Monitoring was undertaken throughout the project and early reports provided some quick solutions to improve energy efficiency. The Council implemented changes based on these recommendations and the final reports on the Evolve and Leechmere centres were provided to the Council in April 2022. These reports presented data which showed the impact of the early recommendations and provided the Council with a range of further short- medium and long-term recommendations to decarbonise each building.

6.3.12. After a successful pilot, the Council is continuing its partnership with Nomad and BAI and is scaling the project up to help address emissions from further properties. This process will be undertaken in phases, with the next phase of the project focusing on a further 12 buildings. This includes a mixture of Council, Together for Children and Sunderland Care and Support properties and consists of a mixture of offices, business centres, depots, schools and museums. The carbon savings from short-term actions taken so far at Evolve and Leechmere equates to 111 tCO_2e, with the potential to achieve a further 76 tCO_2e from recommended longer-term measures. As part of the next phase of the project, it is expected that further emissions savings will be achieved as the Council acts on the recommendations made for Evolve and Leechmere and as more buildings are assessed through the project. Furthermore, it is projected that work on the further 12 buildings could lead to carbon savings of 839 tCO_2e, if capital works are completed following the recommendations.

Non-Domestic (Citywide)

6.3.13. Sunderland City Council delivered the Business Renewables Energy Efficiency Sunderland (BREEZ) project, which helped Small and Medium-Sized Enterprises (SMEs) to install energy efficiency measures. BREEZ was funded through ERDF, with an overall objective to reduce energy consumption and enable carbon reduction in a compliant and cost-effective way. This was achieved by upgrading old, inefficient systems with new, energy-efficiency upgrades that have been approved and agreed prior to their installation. Typically, BREEZ offered 50% grant funding towards microgeneration (e.g., Photovoltaics), insulation, low-carbon heating upgrades and LED lighting. Grant support for upgrading business process equipment was also available in certain circumstances. At the end of the project in June 2023 over 300 businesses and community groups had been contacted and advised, 83 SMEs

were fully engaged (including audits, advice and guidance). 74 BREEZ grants totalling £532,449 were allocated and, with 50% match funding attracted from SMEs and Community Groups, the total value of energy efficiency measures installed was £1,249,334. This builds on the successful BEST project at regional level, which delivered 14 grants in the city with a total project value of £130,000 completed in March 2022. Plans are underway for a potential BREEZ 2 project.

6.3.14. Sunderland Council and College (Education Partnership North East) are working closely with industry to develop the Housing Innovation Construction Skills Academy (HICSA) at Riverside Sunderland which will provide education and training opportunities, linking to Research & Development to ensure the skills of the region meet the future needs of industry linked to MMC. The partnership includes close cooperation with Sunderland-born architect George Clarke's Ministry of Building Innovation and Education (MOBIE). This will support the goal of Sunderland becoming carbon neutral as a city by 2040, also 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, and that will lead the way with training MMC. Sunderland has become an official training partner of The Retrofit Academy CIC and HICSA has been licensed to become an official Retrofit Academy Hub for the emerging North East Mayoral Combined Authority area. HICSA is currently scheduled to open in Spring 2025.

6.3.15. 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. Expo is currently scheduled to be held in October 2023.

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 was part-funded through the European Regional development Fund (ERDF) – across a range of Council operational premises. Through SESEP, the Council installed 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. The Council has also installed solar PV and battery storage at 7 major operational sites with assistance from ERDF grant funding. The value of this work is approximately £3 million. At the new Parsons Depot facility the energy generated by the Solar PV will be stored in batteries and used to charge Electric Fleet Vehicles.

6.4.4. The Council continues to explore the ability to utilise renewable energy in the form of minewater in the city centre. Phase 1 of the project is focused across City Council buildings and those of key partners. 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. The Council has also prepared an outline business case for this project and stakeholder engagement is ongoing. Subsequent volatility in the construction market, particularly steel prices, has meant the price of drilling casing has become prohibitively costly. The City Council continue to work with The Coal Authority to determine whether anything of meaningful value can be achieved within budget, in parallel we are in dialogue with DESNZ regarding funding options to further this research area. Green Heat Network – Transition Scheme Funding has been secured and a borehole contractor is being appointed to design the boreholes, however, increases in construction and steel prices mean the existing budget is insufficient to drill at production scale. It is expected that, if successful, the project could save 4,100 tCO_2e and 33,000MWh/year. In parallel, for the wider Sunderland Central district heating project; the Council are about to launch, what is hoped to be, an industry reforming procurement strategy. Seeking a funder/operator to formally engage at the commercialisation stage and enter into a Joint Development Agreement (JDA), if successful that same funder/operator would proceed to delivery.

6.4.5. In autumn 2021 DESNZ consulted on proposals for the implementation of Heat Network Zones in the England to support development of citywide district heating opportunities. 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 regulation, mandating powers, and market support. Sunderland is 1 of 28 pilot cities assisting DESNZ with developing and piloting their methodology for heat network zoning – working with major and large energy users among the city's business community and public sector.

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. Significant progress has

already been made on the Microgrid development, which is expected to be energised and operational from Q.2 2026.

6.4.7. The City Council has appointed Jacobs to act as a Strategic Energy Advisor over a 9-month period commissioning them to undertake a review and make recommendations in four key areas including an Energy Action Plan for the overall land supply, a Building Action Plan for Council property, the Port of Sunderland as a potential Energy Hub and a review of current and future Development Standards. Findings provided by Jacobs will play a crucial role in informing future decision-making within the City Council. These recommendations are expected to guide future actions, policies, and investments in strategic energy development. It is anticipated that this comprehensive review will be completed by the end of 2023, providing a timely basis for future planning and initiatives in Sunderland.

6.5. Low Carbon and Active Transport

6.5.1. Activity in this area includes work to improve sustainable transport, enabling the transition to walking and cycling, public transport and electric vehicles.

Walking and Cycling

6.5.2. The Local Cycling and Walking Infrastructure Plan (LCWIP) document, which was adopted by Cabinet in October 2022, sets out a plan for walking and cycling infrastructure delivery in Sunderland. It provides a comprehensive framework to guide Sunderland City Council and its partners regarding planned walking and cycling infrastructure over the next ten years. The plan is used to support funding applications to enable delivery and in taking planning and design decisions regarding transport schemes more broadly, including active travel.

6.5.3. The Sustainable Transport Team has created an Active Travel Plan for City Hall, to seek to decrease the modal shift of cars travelling to the building. Further Active Travel Plans are also being made for further buildings across the Council's operational estate.

6.5.4. The Council continues to work closely with Better Points, an app that tracks travel movements via GPS using smartphones and rewards participants with points for using more sustainable modes of transport like walking, cycling and using public transport as a pilot project. Roughly 900 users have registered for the app as at the end of the 2022/23 financial year (with this figure rising to 1275 as of August 2023) and engagement rates have been very high throughout the project with an average of 67% of users recording an activity month-on-month. A total of 82,559 trips were recorded over the six-month pilot programme (March – August 2022), of which 71,433 were by active modes. 1,115 trips

replaced a solo car journey. The Council recently extended its partnership with Better Points.

6.5.5. In addition, Sunderland City Council collaborated with Nebula Labs and the UK Digital Catapult under its Internet of Things for Local Authorities to pilot a proof-of-concept app to automate travel surveys, by tracking journeys and automatically working out the mode of transport taken by employees. During the pilot, the app gathered over 700 data points and identified journeys correctly to between 80% and 96% accuracy.

6.5.6. The Council continues to facilitate a Cycle to Work Scheme, which in 2022-23, received 32 completed orders to the value of £32,412, which will offset an estimated 1800 kgCO_2e from employees (estimate provided by the Cycle to Work provider).

6.5.7. The Capability Fund has been used for cycle training for 86 people at Thompson Park in July / August 2022. Since August 2022, Active Travel Funding of £204,296 has also been awarded to the Council via the Capability & Ambition Fund. This funding is allocated to support the development of the LCWIP, scheme design, engagements and consultations, cycle training, cycle maintenance, cycle security and active travel communications / marketing over a 12-month period.

6.5.8. Sunderland worked with E-Scooter providers Neuron (March 2021 – November 2022) and Zwings (January – May 2023) as well as the Department for Transport to trial E-Scooters in the city. The Neuron E-Scooters made over 124,000 journeys in 2022, covering more than 250,000km. The trial area was also expanded in May 2022, seeing the scooters become available at the IAMP Area and at Washington Road, meaning a wider demographic can benefit from a further radius and more availability. Zwings took over from Neuron as the provider of E-Scooters in Sunderland in January 2023, however unfortunately withdrew from the city in May 2023. During this period, the Zwings E-Scooters travelled a total of 3,239 miles. The City Council is continuing to explore micro-mobility opportunities in the future.

6.5.9. The Council has also introduced 4 E-Bikes at Jack Crawford House and South Hylton House, to improve micro-mobility options for staff at these buildings.

6.5.10. Following a successful bid in January 2022, the Council is participating in the 'Local Climate Engagement' (LCE) programme, which is a partnership with Involve, the Democratic Society, Shared Future and Climate Outreach. The LCE programme is working with local authorities to deliver high-quality climate change public engagement projects in a way that benefits both the local authorities and their communities. Sunderland was one of 21 local authorities selected across the two LCE programmes from 75 applications and one of only 5 authorities to be offered the opportunity for in-depth project support for which

it applied. Sunderland's project is focusing on public engagement around sustainable travel behaviours. The project has provided training to approximately 20 Council and Together for Children colleagues, some virtually and some in person from a range of services areas. Participants have formed 3 focused teams to plan engagement on three separate projects including social prescribing for active travel (which is partly funded by the Healthy Cities Grant), cycleway design at Dame Dorothy Street to support the Local Cycling and Walking Infrastructure Plan (LCWIP) and home to school transport for SEND children and young people.

6.5.11. 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.

6.5.12. The Council was also awarded £2.1 million Active Travel Funding to create the Ryhope Road Cycle route, leading from the City Centre to Grangetown, which will create 2km of segregated off-road cycleway.

6.5.13. The Council has been awarded an additional £30k from Public Health's Healthy City Grant to continue with the 'Park That Bike' scheme in Sunderland that supplies free cycle parking to business and organisations to encourage more residents to cycle.

Logistics

6.5.14. Self-driving vehicles will help deliver passengers and cargo in and around Sunderland, after two projects were awarded a share of £84 million in joint government and industry support for self-driving transport technology. £42 million in government funding is being matched by a further £42 million from industry.

6.5.15. Project V-CAL, being led by the North East Automotive Alliance (NEAA), will run up to 4 zero-emission autonomous HGVs around the Nissan Sunderland site, on private roads where the vehicles will navigate traffic lights, roundabouts, and other road users. This is a major step towards deploying the technology on public roads. The work, in partnership with Vantec, Nissan Motor Manufacturing UK (NMUK), StreetDrone, Nokia, Newcastle University, ANGOKA, and Womble Bond Dickinson (UK) LLP, has been awarded £4 million by government, matched by industry to a total £8 million. The HGVs will operate without any personnel on board but will be monitored by a remote safety driver as backup. This builds on the successful 5GCAL (5G Connected and Automated Logistics) project which piloted the UK's first automated 40 tonne truck, powered by 5G, at Vantec in Sunderland.

Public Transport

6.5.16. The Sunderland Advanced Mobility Shuttle project will trial three self-driving zero emission Aurrigo Auto-Shuttles, which will transport passengers on public roads between Sunderland Transport Interchange, the Sunderland Royal Hospital, and the University of Sunderland City Campus. Whilst safety drivers will always be onboard, the project will develop and demonstrate a cyber secure remote supervision protocol, an important step towards commercial deployment. The project has been awarded £3m by the government, matched by industry to a total £6 million and is led by Sunderland City Council in partnership with Aurrigo, Stagecoach, ANGOKA Ltd, Newcastle University, Swansea University, and BAI Communications.

6.5.17. The Levelling Up Fund Round 2 is providing support for 20 buses operating along the seafront in Sunderland to be converted to electric.

Electric Vehicles

6.5.18. An Electric Vehicle Delivery Plan has been developed as one of the commitments within the Low Carbon Action Plan. This has been informed by a Sunderland EV Study conducted by Jacobs and sets out how the Council will take forward the parts of the LCAP focused on embedding electrification and de-carbonisation into the council's replacement plan for fleet as well as supporting the transition to ultra-low/zero emission vehicles across the city by residents, partner organisations and business. Specifically, the plan looks at council fleet replacement, grey fleet / business travel, transport policy, planning, infrastructure delivery, stakeholder engagement, public transport and the taxi sector. The intention is to continue to implement the plan overseen by the EV Delivery Group and keep actions under review. A feasibility study has been completed to identify appropriate locations for community-based EV charging in phases.

6.5.19. The £9.1 million redevelopment of Parsons Vehicle Workshop and Depot in Washington is now complete and occupied. The building will act as an electric vehicle charging hub for the council's fleet of vehicles, utilising a large 400kW array of roof mounted solar PVs and 2MWh battery storage units. The site also features 6 rapid 50kW electric vehicle chargers and approximately 25 fast chargers (comprising a mix of 22kW and 7kW). This will support the ongoing electrification / decarbonisation of the Council's fleet.

6.5.20. The £10m Local Electric Vehicle Infrastructure (LEVI) pilot fund is intended to encourage large scale, ambitious and commercially sustainable projects that leverage significant private sector investment to support the rollout of electric vehicle charging infrastructure. Sunderland secured £493,568 grant funding towards a £822,612.70 project supporting the delivery of 219 fast charging outlets for residents at Riverside Sunderland and on-street locations. This

includes funding for 115 wall-mounted charge-point sockets at Riverside Sunderland Multi-Storey Car Park as well as residential on-street charging / an EV Community Hub supporting 104 outlets at 20 locations across the city.

6.5.21. On-street Residential Charge Point Scheme Round 1 (OCRS) works were completed in March 2023 (grant worth £69,300 initially secured in January 2021). This saw 10 EV charging points for use by residents where off-street parking was unavailable at Harbour View in Roker, Morgan Street in Southwick, Ocean Road in Grangetown, Aldenham Road in Lakeside Village and Market Street in Hetton.

6.5.22. The regional Levelling Up Fund Round 2 proposal, focused on EV infrastructure, has been successful. As well as supporting buses to be converted to electric (as referenced in public transport section), Sunderland has received £667,000 to support the delivery of three rapid charging hubs.

6.5.23. The Mobility Hub at City Hall continues to progress. Since 10 Nissan Leafs arrived in March 2022, the mobility hub is now operational for employees. 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 216kW PV array with battery storage installed in October 2023 at St Mary's Multi Storey Car Park (where the vehicles are located) creates opportunity for the Electric Vehicle miles to be powered by renewable electricity.

6.5.24. Ten new state-of-the-art street sweepers have started work across the city and one of these is fully electric. The sweepers have a small turning circle so that they can access more areas and, as well as brushing up the highways, they can be adapted for use as winter maintenance gritters, snow ploughs, and as mini-tractors for load carrying. As one of these new sweepers is fully electric, this increases the total of council EV vehicles now up to 44 (which equates to ten per cent of the total fleet).

6.5.25. 50 E-Vans have been ordered to help further decarbonise the Council's operational fleet.

Other

6.5.26. A 'School Streets' trial scheme was launched in April 2022, with streets temporarily closed to tackle problem parking. A trial street closure was operated at St Bede's Catholic Primary School Washington to address road safety concerns and improve air quality. The Council is currently exploring opportunities to extend and expand the School Streets approach following assessment of pilot.

6.6. 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. During 2022/23, 11 green sector projects have delivered a total of 433 jobs and £121.5 million of capital investment.

6.6.3. As at the end of 2022/23, there are a total of 9,800 jobs in 41 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].

6.6.4. Work is underway on the construction of the AESC gigafactory, the first of its kind in the UK and a key part of the EV36zero project, a £1billion project announced in July 2021 to create an EV eco-system that will create green jobs and the manufacturing of green cars powered by renewable energy. This will create an additional 1,000 jobs at the gigafactory at the International Advanced Manufacturing Park.

6.6.5. Sunderland is also home to a range of fast-growing SMEs working at the leading-edge of electrification. Advanced Electric Machines (AEM) is a university spin-out that designs and manufactures electric motors and drives. USA-based Turntide recently acquired Hyperdrive Innovation of Sunderland, which designs and produces lithium-ion battery packs and management systems. Saietta Group make state-of-the-art electric drives in the city, reshoring production previously done overseas. These companies take advantage of a supportive ecosystem. For example, Sunderland is home to one of four DER Industrialisation Centres nationally, with a focus on prototyping and scale-up of electric motor technologies. Another company located in the city, Haskel Energy Systems, is a world leader in hydrogen refuelling systems. Its global centre of excellence is based here, producing systems that are exported to global markets.

6.6.6. In terms of other aspects of cleantech, Norway's Wastefront is developing a £100 million plant at the Port of Sunderland, using an innovative process to cleanly turn waste tyres into material from which new tyres and other products can be made. Another Norwegian company, Quantafuel, is establishing a £100 million facility at the Port that will process waste plastic into synthetic hydrocarbons.

6.6.7. The green economy has been integrated into the Business Investment Aftercare Programme, which supports all the strategically important employers in the city. All green businesses, based on an agreed definition, are included in this programme, regardless of size, recognising their importance to the city.

6.6.8. Work has also commenced to signpost businesses to access to finance specific to the green economy / electrification. Also, the business support application forms / scoring matrix for projects supported by the Business Investment Team (BIT) has been updated to capture green economy data and encourage green economy support.

6.6.9. Opportunities to raise awareness of good sustainability practice within businesses in the city are regularly sought and PR produced to highlight this. Similarly, new green businesses locating or growing in the city are promoted via PR.

6.6.10. Sustainable awards and events to recognise best practise are promoted to the business community in the city and application support provided to those who require it.

6.6.11. Utilising UKSPF in Sunderland, work is underway to create a new decarbonisation grant scheme to support businesses in the city building on the success of Breez.

6.6.12. 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).

6.6.13. To facilitate skills development with education and business partners to support green economy growth, Sunderland Council and College (Education Partnership North East) are working closely with industry to develop the Housing Innovation Construction Skills Academy (HICSA) at Riverside Sunderland which will provide education and training opportunities, linking to Research & Development to ensure the skills of the region meet the future needs of industry linked to modern methods of construction (MMC). The partnership includes close cooperation with Sunderland-born architect George Clarke's Ministry of Building Innovation and Education (MOBIE). Sunderland has become an official training partner of The Retrofit Academy CIC and HICSA has been licensed to become an official Retrofit Academy Hub for the emerging North East Mayoral Combined Authority area. HICSA is currently scheduled to open in Spring 2025.

6.6.14. To raise awareness and understanding of the climate agenda within businesses, the development of a sustainable toolkit, initially focussed primarily on sustainable travel, is underway. The Council has also commenced initial conversations to provide businesses with a platform to signpost to the most appropriate carbon footprinting tools based on their size and stage in their low carbon journey. Regular information is also being shared with businesses which, to date, includes engagement opportunities such as the We Love Cities campaign (September – October 2022), Eco-Fest (October 2022), and a

Christmas upcycling event (November – December 2022). Building on this, work is ongoing to support Sunderland's BID to embed Low Carbon into the development of their next Business Plan and volunteer opportunities are being shared with businesses.

6.6.15. In response to interest from local schoolchildren in green careers, the Business Investment and Low Carbon teams are working together to produce a series of videos featuring some of Sunderland's leading green businesses. The videos showcase what each business does, how it relates to sustainability, the people who work there, the skills needed for different roles, and potential routes that pupils can follow to build a career there in the future. As part of this the videos will show both younger and more senior staff and the diverse career paths they took to get where they are and where they plan to go, including vocational, apprenticeships and academic routes. The videos will be pitched at pupils in Key Stage 2 to Key Stage 4 and will be promoted to all schools in the city, as well as being featured in toolkits and shared more widely across social media.

6.7. 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.

Reuse and Recycling

6.7.2. As part of the South Tyne and Wear Waste Management Partnership, Sunderland has a target to increase household recycling rates to 55% by 2025, 60% by 2030 and 65% by 2035. In 2021/22 (the latest year data is available for) the citywide recycling rate was 29%, which is the highest it has been since 2015/16. In 2022/23, significant work has been undertaken to help improve citywide recycling rates.

6.7.3. Following the new state-of-the-art Household Waste and Recycling Facility at Pallion being opened in February 2022, the re-use shop at this facility also became fully operational in November 2022. As at the end of the 2022/23 financial year, the facility had diverted over 9 tonnes of waste from energy from waste, saving roughly 200 kgCO_2e. The recycling facility 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. The Council is working to raise awareness of recycling opportunities within schools and other settings, both through visiting schools to deliver talks and workshops and by encouraging visits to the STWWMP Waste and Recycling Visitor Education Centre. In 2022, 12 sessions were offered (10 in school and 2 tours) involving 6 schools and 386 children. Building on this between January 2023 – April 2023, 13 school events were led by the Campground Education Centre, with 623 children participating in zero waste lunches, cooking, site visits, assemblies and bird feeder workshops. In addition, 6 community events have been run by the centre, working with 106 people from the International Community of Sunderland, Sunderland Students Union, Social Chef and Grundfos Sunderland. This included litter picks and recycling / food waste events.

6.7.5. The Council has introduced a 'No Side Waste' Policy. It is intended that this will help to help reduce waste generation and promote responsible consumption and waste habits in households.

6.7.6. Work is also ongoing to promote and encourage Trade Waste Collections that contain a recycling offer, including improving the Council's Trade Waste service.

Single-use plastics (SUPs)

6.7.7. Refill Sunderland was launched on 16th June 2022 (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. As at the end of the 2022/23 financial year, the number of Refill stations had increased to 112 and work is ongoing to increase further uptake.

6.7.8. Work is ongoing to encourage beach, river and greenspace clean ups to remove SUPs. Many volunteers actively participate in beach cleans and the EGS group also participated in a beach clean hosted by Seascapes in March 2023.

6.7.9. To improve sustainable waste within school meals, SUPs have been completely removed from primary schools and commercial catering provided by the Council. Furthermore, all disposables in the school meals provided by the Council's in house service and civic / commercial catering are recyclable, biodegradable or compostable.

Sustainable Food

6.7.10. Significant work has been undertaken by the Council's school meals service (a service area for all Sunderland schools who buy their school meals service from the Council), who continue to retain the Bronze Food for Life Served Here certification and the Green Kitchen Standard across all primary schools. The Food for Life Served Here Bronze award provides assurance to schools that the food being services is healthy, fresh, tasty, seasonal, sustainably and ethically sourced and traceable in terms of its province. The Green Kitchen Standard, which is a national certification developed by the Soil Association and Carbon Trust recognises caterers that undertake best practice to sustainably manage energy, water and waste.

6.7.11. The Evolve pre-order system is being implemented in schools to minimise food waste. As at the end of the 2022/23 financial year, 8 primary schools were signed up to the system. It is hoped that this number will increase to 11 by November 2023.

6.7.12. The Council is supporting schools to achieve the Bronze Food and Nutrition Charter Mark, which was initially rolled out in 2021 as an element of the Sunderland Healthy Schools Award. Any Sunderland education setting can apply to the Bronze level, which was rolled out in 2021. There is significant focus on environmental sustainability including plant-based and planet-friendly diets, waste minimisation and seasonal eating among other initiatives. There are now 5 educational settings accredited at bronze level across early years, primary and secondary. The silver level is expected to be developed for the 2023/24 academic year, with the gold level to follow in 2024/25.

6.7.13. The 'Belly Bugs' pilot, which provides primary schools with teaching resources to introduce children to their gut microbes and food choices, was launched in October 2022. The pilot was successful and is now in its second wave of engaging schools in the trial.

6.7.14. The Sunderland Good Food Partnership has successfully applied to the Sustainable Food Places Network and in March 2023 received £5000 funding from Sustain's 'Food for the Planet' campaign, which will go towards developing a 'Sustainable Food Charter' for the city. This work is being led by the Sunderland Food Partnership coordinator and began with a 'Sustainable Food Summit' for residents in April 2023. The Sunderland Good Food Charter has since been drafted and is currently out for public consultation.

6.7.15. Vegan options have been made available at the Brew and Bake café within Sunderland City Hall.

6.7.16. The Council has also supported a regional feasibility study into the development of a food waste treatment facility for the North East.

Allotments

6.7.17. The Council has completed an audit of citywide allotments, which will be used to help inform a future allotment strategy, which is planned for October 2023.

6.7.18. 350 abandoned allotments were found as part of the allotment audit, of which 100 have now been brought back into use. Furthermore, new allotment sites at Featherbed Lane and Tunstall are being explored.

Garden Waste

6.7.19. The Council is promoting its garden waste collection scheme on an ongoing basis to improve uptake. The Council currently provides collections from April – November annually and are one of the lowest charging authorities in the North East region. The Council is also planning a review of its garden waste collection service moving forward.

7. Appendix A – Summary of Changes to Methodology / Data Availability

Emission Source	**Summary of Changes**
Gas consumption	No change
Vehicle fleet	Consumption data changed from mileage to fuel consumption
Purchased electricity generation	No change
Purchased goods and services	No change
Leased assets	Brings together ‘scope 3 gas’, ‘scope 3 electricity’ and ‘scope 3 vehicle fleet’ from previous annual reports
Employee commuting	No change
Business travel	No change
Fuel and energy related activities	Along with transmission and distribution, now includes datasets for well-to-tank emissions
Waste generated in operations	New dataset for the 2022/23 financial year

8. Appendix B – Glossary of Terms

Term	Definition
BEIS	The Government Department for Business, Energy and Industrial Strategy. Replaced by the Department for Energy Security and Net Zero (DESNZ) in 2023.
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.
DESNZ	The Government Department for Energy Security and Net Zero. Replaced BEIS in 2023.
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.