

Appendix 1 - Annual Greenhouse Gas Emissions Report, 2022-23

1.0 Introduction

In October 2019 East Sussex County Council declared a Climate Emergency and in 2020 it adopted a Climate Emergency Plan, which was updated in 2023. The approach taken in the Plan is that, to make its fair contribution to reducing county-wide emissions, the Council will aim to stay within a science-based carbon budget. The budget is based on a recognised methodology developed by the UK's Tyndall Centre for Climate Change Research for calculating carbon budgets by local authority area. The Tyndall model, based on current scientific understanding, indicates that to stay within a budget based on a rise of no more than 1.5 degrees centigrade above pre-industrial levels (as targeted in the UN Paris Agreement on Climate Change) emissions from the county need to be cut in half every 5 years. Therefore, the Council has committed to also cutting its corporate emissions in half every 5 years, which equates to an average reduction per year of 13%, in order to make its fair contribution to the county reduction target.

This report gives an annual summary of emissions of greenhouse gases (GHG) arising from Council operations, measured as carbon dioxide equivalent (CO₂e) emissions for the financial year 2022-23, compared with emissions from the baseline year of 2019-20. The report follows guidance in the internationally-recognised Greenhouse Gas Protocol on how we should measure and report on Council emissions.

This report covers:

- **Scope 1 emissions:** from fossil fuels used for heating schools and corporate buildings, together with the Council's vehicles.
- **Scope 2 emissions:** from electricity used in building and for street lighting.
- **Scope 3 emissions:** from all other activities of the Council and include business travel, water usage, waste, procurement and staff commuting.

Control v Influence: The Council has direct control over Scope 1 & 2 emissions, as these occur from its own operations, and can influence but not directly control Scope 3 emissions.

2.0 CO₂e Emissions

Figure 1 provides a summary of the Council's estimated emissions in 2022-23. Scope 1 & 2 emissions are calculated based on robust consumption data. These emissions arise from the operation of the Council's buildings and vehicle fleet, so are under the Council's direct control. Scope 3 emissions are by far the largest part of our total emissions, as is typical for a local authority, as most of the Council's revenue and capital budgets are used to procure goods, services and works from third parties to deliver statutory duties. Our Scope 3 emissions mostly comprise the Scope 1 and 2 emissions of other organisations (e.g. the energy that contractors and suppliers use to deliver services on behalf of the Council). Table 1 provides details of what we have included and excluded from our reporting in 2022/23 and how emissions have been calculated. We have used the 2022 conversion factors, published by government, which are available [here](#).

Scope 3 emissions have been calculated using a combination of robust measured data, where this is available (e.g. staff mileage claims, tonnes of waste), and estimates where robust data does not exist or would be too resource intensive to gather (e.g. from the thousands of companies in our procurement supply chain). Estimated emissions are created by applying industry specific emission factors to the Council's supply chain spend. This means that the

Scope 3 emission figure provides an idea of scale, rather than an accurate measure of carbon emissions. In common with other local authorities, we are working on improving the quality of scope 3 data over the next few years by moving from estimated to reported emissions, for example by requiring major suppliers to report on their emissions and by collecting information on carbon reduction commitments.

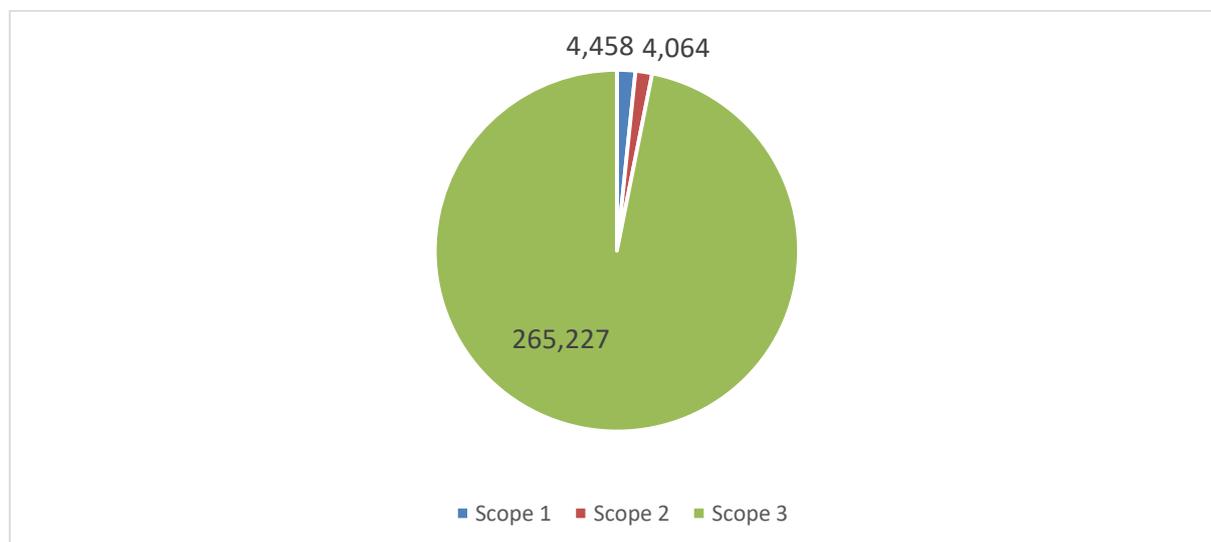


Figure 1: Scope 1, 2 & 3 Emissions Breakdown (tCO₂e 2022-23)

Note that our carbon budget and target currently cover our Scope 1 & 2 emissions and not our Scope 3 emissions, because the uncertainty with scope 3 procurement data means that it's not yet possible to set a robust baseline. Therefore, this report on performance covers Scope 1 & 2 and not 3. This is a similar approach to that adopted by most local authorities. We will begin to include Scope 3 emissions within our target and reporting once the data are more robust.

2.1 Performance Against the Carbon Reduction Target

Figure 2 and table 2 show the annual progress to date against the target to reduce Scope 1 & 2 emissions during the 5-year carbon budget covering 2020-25, measured against the baseline year of 2019-20. The units are in tonnes of carbon dioxide equivalent (tCO₂e). The main points to note are that:

1. In 2020-21 the annual reduction target of 13% was marginally exceeded, largely due to a combination of Covid lockdowns, which saw a significant reduction in energy use for heating buildings and business travel, the continued decarbonisation of the national electricity grid, Council carbon reduction measures and changes to the Council's portfolio of buildings.
2. In 2021-22 the annual 13% reduction target was missed, mainly due to a rebound in building usage and business travel post Covid and a colder-than-average winter.
3. In 2022-23 emissions were further reduced by 15%, or 1,500 tonnes of CO₂e, compared with 2021-22. This was due to the continued decarbonisation of the national electricity grid, a mild winter, Council carbon reduction measures and changes to the Council's portfolio of buildings.
4. Overall, the cumulative reduction in the Council's emissions between 2019-20 and 2022-23 was 32%, against a cumulative reduction target of 34% (ie. a shortfall of 318 tonnes of CO₂e).

Emissions	t CO ₂ e	Explanation
Scope 1		
Gas Consumption	3,747	All natural gas used in ESCC buildings or those which we occupy to which ESCC is the counter party to the energy bill, including schools, properties closed and sold in 2022-23 and our portion of shared use.
Gas Oil, Burning Oil and Propane Consumption	482	All gas oil, burning oil, propane and biomass used in ESCC buildings or those which we occupy to which ESCC is the counter party to the energy bill, including schools, properties closed and sold in 2022-23 and our portion of shared use.
Owned Transport	228	All core fleet owned and operated by ESCC.
Process Emissions	n/a	Excluded as not applicable to ESCC activities.
Fugitive Emissions	n.a	Excluded due to cost of data collection.
Total Scope 1	4,458	
Scope 2		
Purchased Electricity	4,064	All purchased electricity used in ESCC buildings or those which we occupy to which ESCC is the counter party to the energy bill, including schools, properties closed and sold in 2022-23 and our portion of shared use. Including street lighting and traffic signals.
Total Scope 2	4,064	
Scope 3		
Electricity Transmission and Distribution	372	Transmission & distribution losses with all purchased electricity.
Business Travel	892	All mileage claimed in private or leased vehicles, but excludes public transport and taxis.
Employee Commuting	2,222	Based on data on travel mode, days in the office, distance from home to work and days worked per year, taken from the 2022 ESCC staff climate change survey.
Employees Working from Home	818	Based on data on number of days worked in the office from the 2022 ESCC staff climate change survey and a UK Government emission factor for working from home. Note that the majority of emissions are related to home heating, with office equipment emissions an order of magnitude less.
Waste Disposal	55	Waste tonnages for corporate buildings and schools.
Water/ Sewage	60	Measured m3 water use in ESCC buildings.
Household Waste Contract	81,252	Emissions estimated via ESCC & SCC model, as reported emissions are felt to require improvement.
Highways Contract	7,597	Contract level Scope 1 & 2 data reported along with reported Scope 3 emission for construction materials (not included in 2021/22)
Ground Passenger Transport (large)	45,813	Emissions estimated via ESCC & Surrey Council (SCC) model.
Ground Passenger Transport (small)	32,931	Emissions estimated via ESCC & SCC model.
Nursing and residential care	41,229	Emissions estimated via ESCC & SCC model.
Facilities Management	9,195	Emissions estimated via ESCC & SCC model.
Manufactured products	7,418	Emissions estimated via ESCC & SCC model.
Home healthcare	6,710	Emissions estimated via ESCC & SCC model.
Construction & Maintenance	5,136	Emissions estimated via ESCC & SCC model.
Other	23,528	Emissions estimated via ESCC & SCC model.
Total Scope 3	265,228	
GRAND TOTAL	273,750	

Table 1. How the Council's carbon emissions have been calculated.

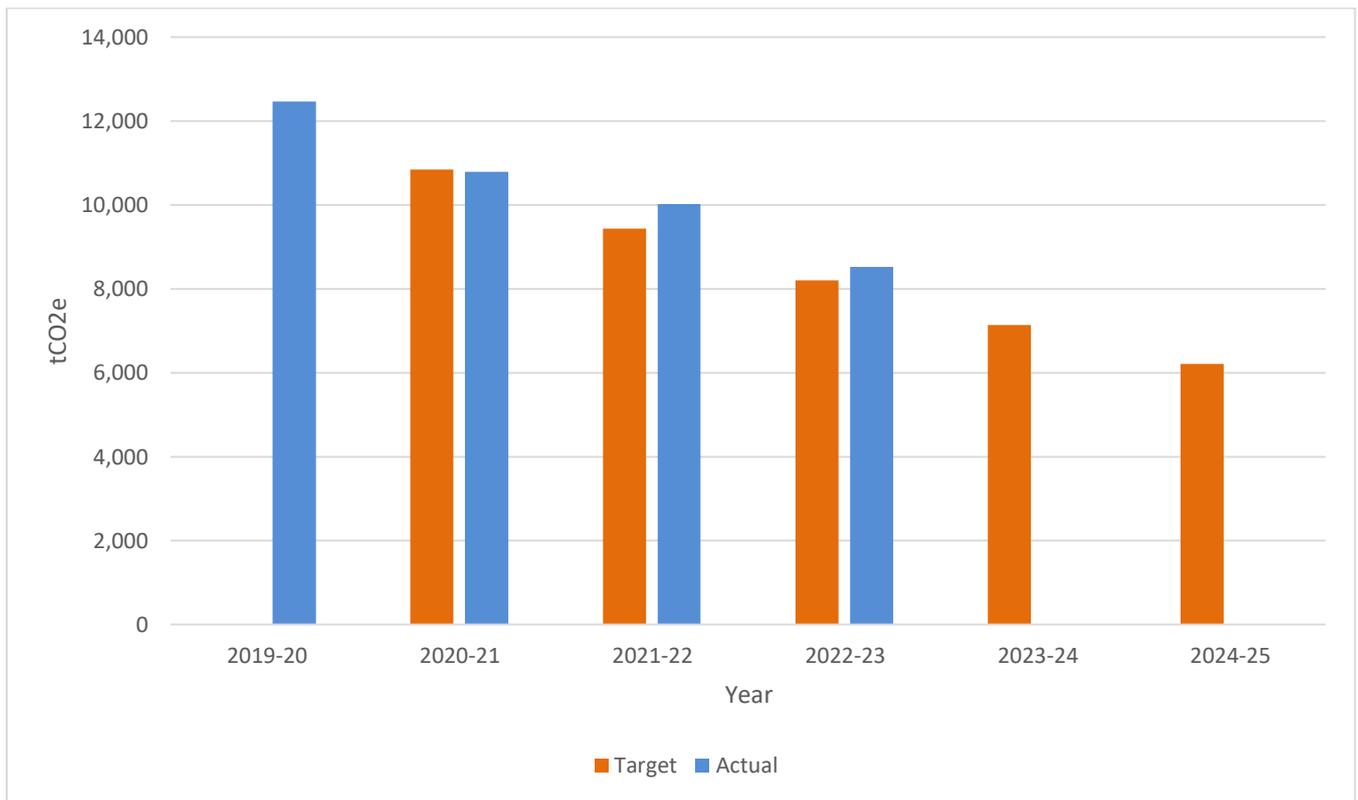


Figure 2: Target and actual carbon emissions to date over the current 5 year carbon budget.

Year	Target footprint (CO ₂ e)	Actual emissions (CO ₂ e)	Actual annual reduction (%)	Cumulative target (%)	Actual Cumulative reduction (%)
2019-20	Baseline year	12,461	n/a	n/a	n/a
2020-21	10,841	10,791	-13%	-13%	n/a
2021-22	9,432	10,023	-7%	-24%	-20%
2022-23	8,206	8,522	-15%	-34%	-32%
2023-24	7,139			-43%	
2024-25	6,211			-50%	

Table 2. Scope 1 & 2 target and actual emissions between 2019-20 to 2024-25.

Figure 3 provides a breakdown of Scope 1 & 2 carbon emissions in 2022/23. The main points:

- **Buildings:** accounted for 82% of Scope 1 & 2 emissions, with schools making up the largest share. Corporate buildings include all non-school buildings, such as office buildings, libraires and residential homes. School buildings exclude those that have converted to academies.
- **Heating:** 2022-23 was milder than 2021-22, which resulted in less energy being used for heating, though heating remained the highest source of scope 1 & emissions.
- **Street lighting:** electricity consumption was down 8% compared with 2021-22, reflecting the Council's low energy lighting upgrade programme.
- **Fleet:** CO₂e emissions were up 9% compared with 2021-22, due to increased mileage, however emissions are overall 25% lower than the 2019-20 baseline.

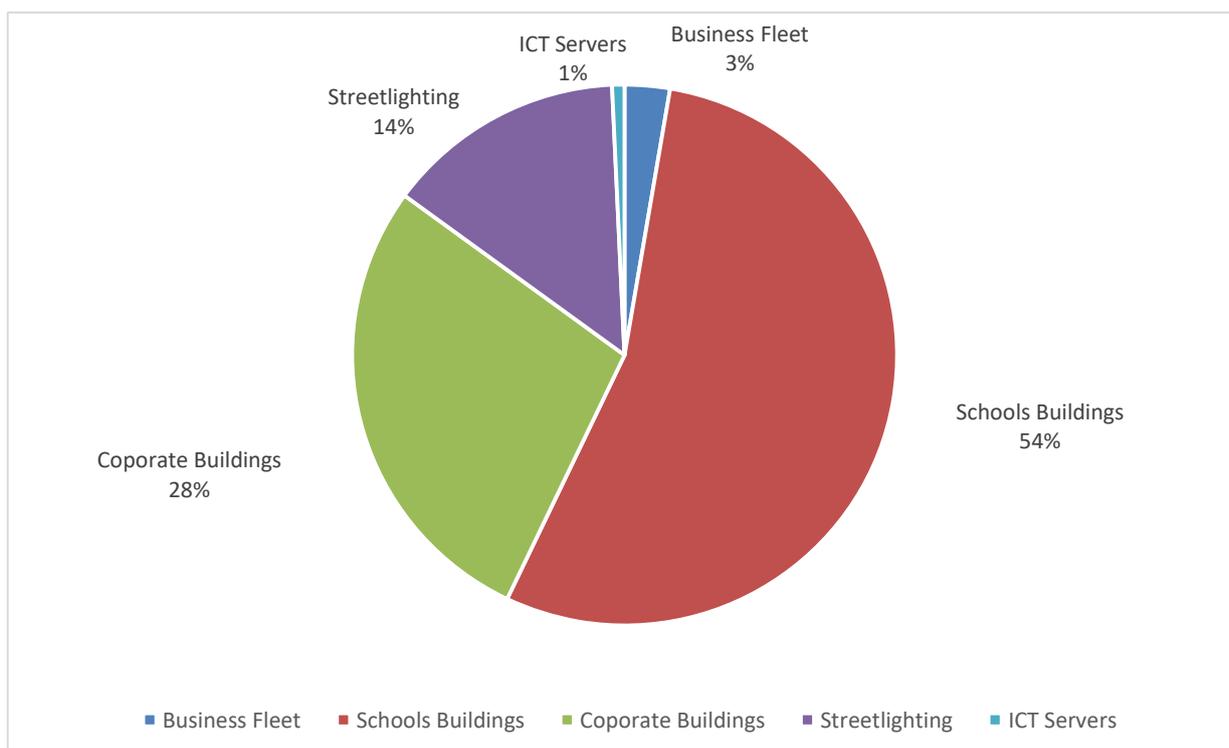


Figure 3: Breakdown of Scope 1 & 2 Council emissions in 2022-23.

Table 3 provides a summary of case studies of sites where solar PV came on-line during 2022-23. On-site solar energy generates around 1.6MW of clean energy each year.

Site	System online	Annual saving (£)	Annual saving (CO ₂ e)
Sackville House	Apr-22	22860	4.7
Herstmonceux school	May-22	5080	1.1
Lansdowne Centre	Jun-22	17620	3.6
Bellbrook Centre	Dec-22	5395	1.1
Hailsham Children's Centre	Jan-23	11460	2.4
Hampden Park library	Dec-22	2620	0.5
Hollington library	Dec-22	1730	0.4
Sliverlands Centre	Feb-23	8440	1.7
Totals:		75,205	15.5

Table 3. List of sites where solar PV came online during 2022-23.

Heat decarbonisation case study - Ninfield Primary school: in 2022-23 £557,000 was spent at the primary school on a range of measures, including improving loft insulation, low energy lighting, battery storage and replacing the oil boilers, which had reached the end of their life, with air source heat pumps. A quarter of the cost was met with a government grant. The work was delivered by local contractors and has reduced the school's carbon footprint by over 60% - which will continue to decrease as the national electricity grid continues to decarbonise. This is illustrated in figure 4.



Ninfield school: air source heat pumps; battery storage; new radiators.

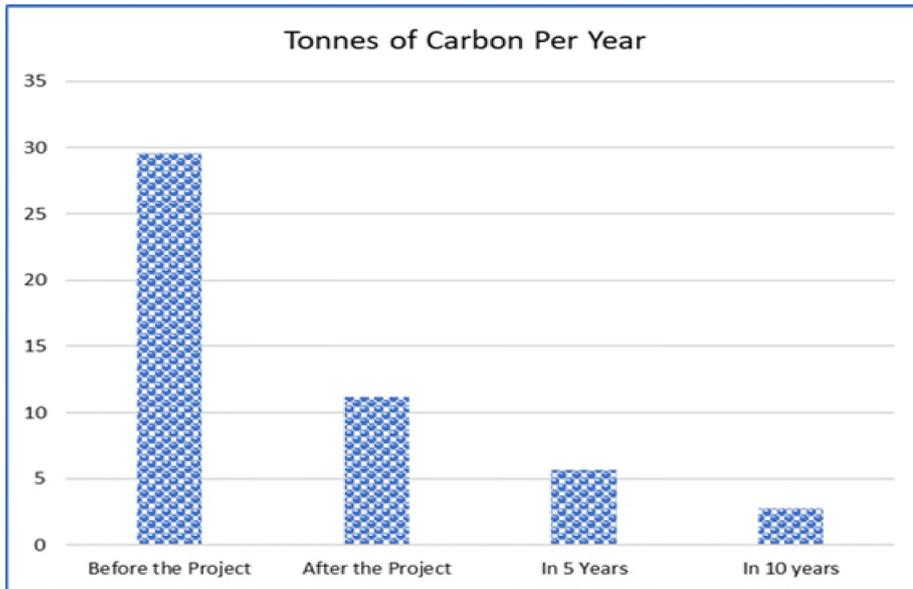


Figure 4. Carbon reduction at Ninfield Primary school.

2.2 Carbon Emissions Over the Longer Term

Since 2008-9, when the Council started to report on its carbon emissions, Scope 1 & 2 emissions have reduced by over 73%. This is illustrated in figure 5.

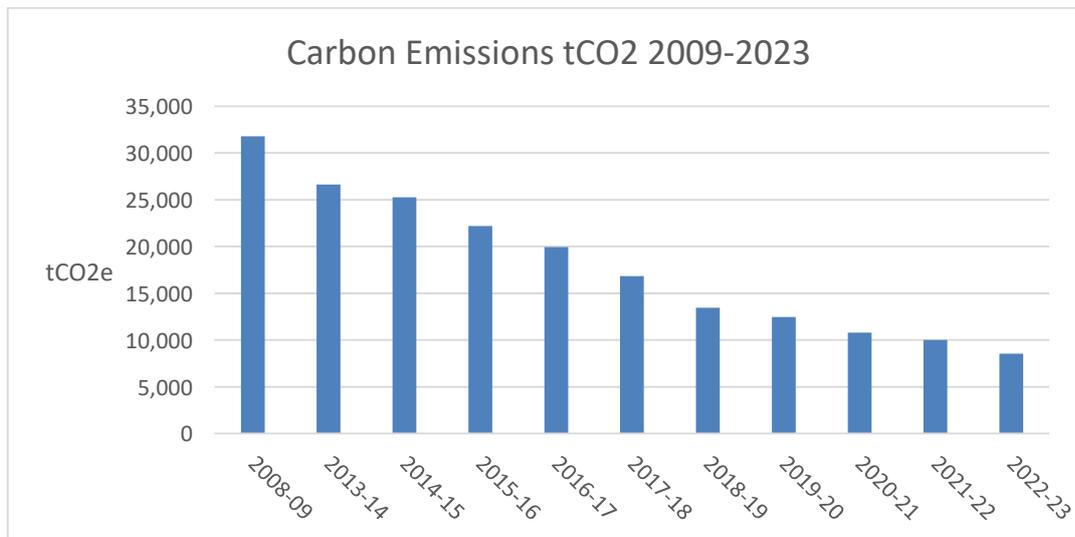


Figure 5. The reduction in scope 1 & 2 Council carbon emissions between 2008-9 and 2022-23.

In 2022-23 we spent £4.26m on corporate climate change, from a combination of our Salix Invest to Save Recycling Fund, the current dedicated £9.9m climate change budget, part of the Property maintenance budget, as well as £1.9m of external funding. Since 2008-9 we have delivered 240 projects, which generate total savings on the Council's energy bills of £920,000 per year. The range of projects includes solar PV, low energy lighting, building fabric improvements, heating controls, boiler replacements, low carbon heat and ICT improvements (Figure 6). This is supported by asset rationalisation, training on good housekeeping, plus monitoring and targeting.

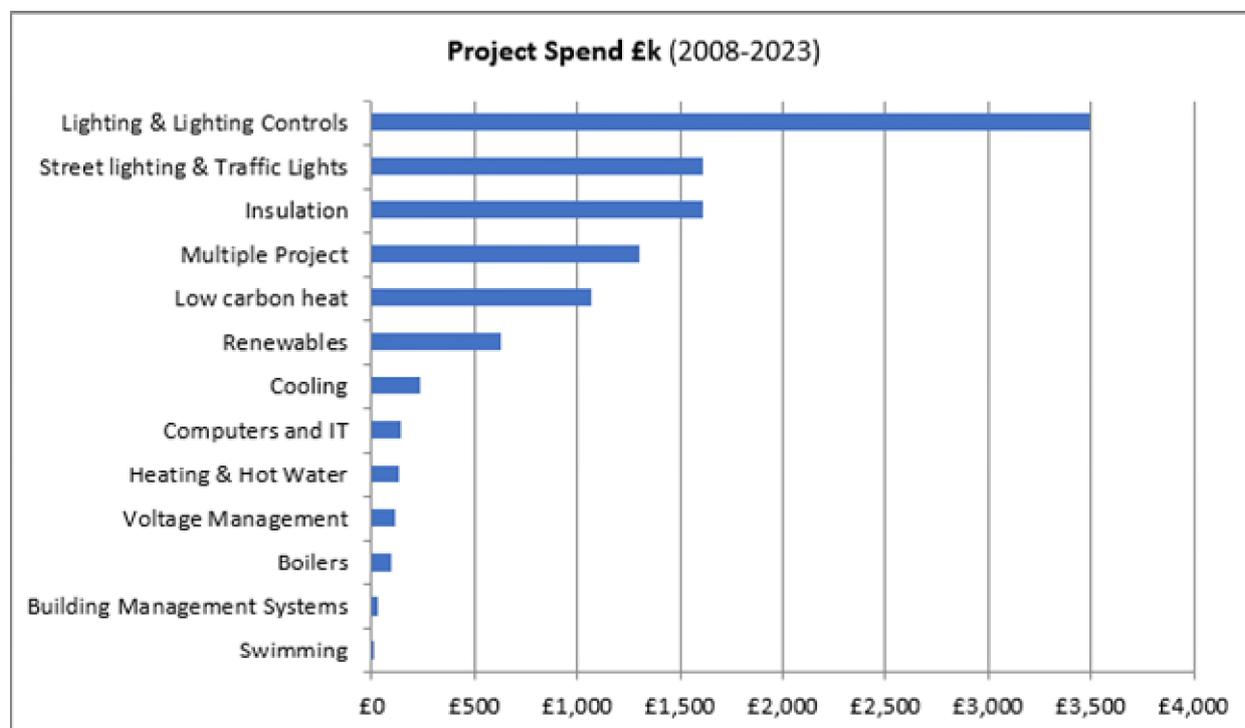


Figure 6. Types of projects and savings delivered (2008 – 2023)

From April 2021, electricity supplied to all corporate buildings and street lighting has been purchased on a green tariff and made available to schools that buy into our energy services (see section 2.4).

2.3 Impact of Grid Decarbonisation and Estate Changes

There are a number of factors that determine the pace and scale of carbon reduction in organisations such as the Council, including:

- The rate of decarbonisation of the national electricity grid.
- The effect of the weather on the need for heating in buildings.
- The type and scale of decarbonisation schemes implemented.
- The change to the size of the organisation.

Figure 7 provides a summary of the relative contribution of the decarbonisation of the national electricity grid and the change to the size of the Council's building portfolio to the reduction in the Council's carbon emissions between 2020-21 and 2022-23. Most of the 'other' section includes the effect of decarbonisation schemes implemented by the Council and the effect of the weather on heating requirements. Both of these are difficult to quantify accurately, for example because decarbonisation schemes implemented throughout the year all come on stream at different times during the year and are affected by issues such as maintenance, how people use and manage equipment and so on.

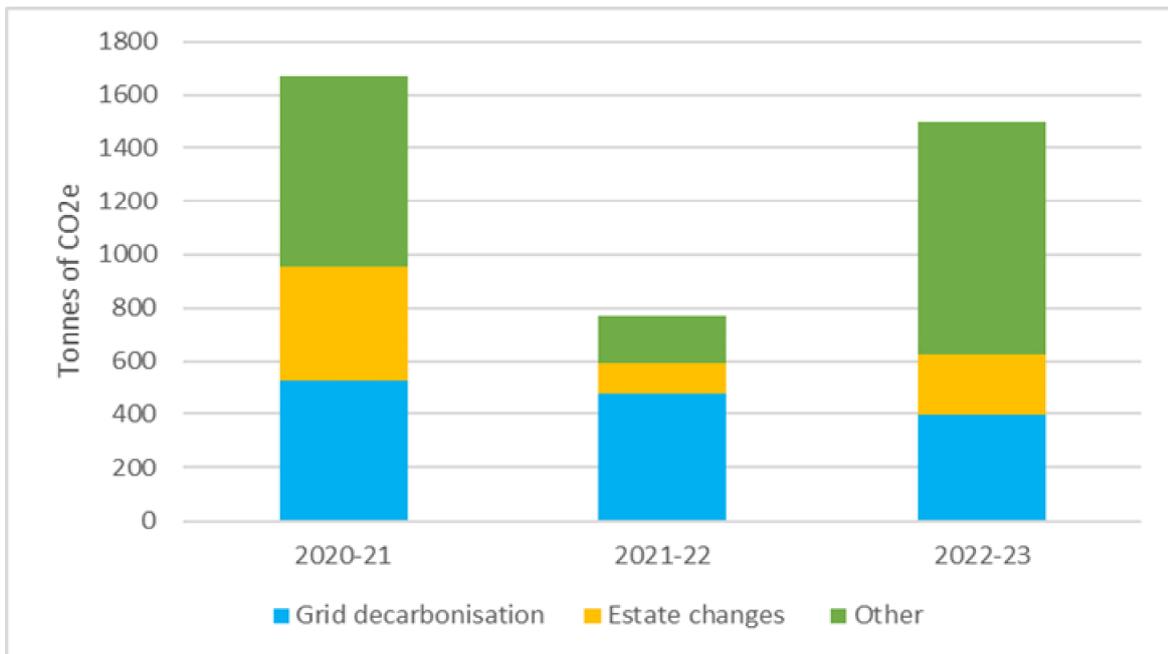


Figure 7. Contribution to the Council's carbon emissions reduction in 2020-21 to 2022-23.

Grid decarbonisation has contributed about 38% of the total carbon reduction between the baseline year of 2019-20 and 2022-23, and changes to the Council's building portfolio have contributed about 20% of the total reduction, mostly due to schools converting to academies and leaving the portfolio. We will re-calculate the Council's carbon baseline at the beginning of each five year carbon budget, to take into account the effect of changes to the Council's building portfolio (see section 2.5 for more details).

2.4 Carbon Offsets

The Council's current focus is on cutting carbon emissions as quickly as possible and so, to date, we have not purchased any carbon offsets. However, the Council recognises that it needs to use all opportunities at its disposal to meet its commitment to get to net zero by 2050 at the latest and so is investigating the opportunities to invest in local, high quality carbon offsets.

From April 2021 electricity supplied to all corporate buildings and street lighting has been purchased on a green tariff. Currently, schools continue to purchase their electricity on a brown tariff, though the Council has offered and encouraged the take up of green electricity by schools.

As is best practice, we do not count our green tariff electricity as a carbon reduction measure because purchasing renewable generated electricity already in the marketplace makes very little material difference to total UK carbon emissions. Instead, the Council uses a location-based approach to calculate our carbon emissions from purchased electricity. This approach uses the average carbon emission intensity of the national grid.

2.5 Base year recalculation

In order to provide meaningful comparisons of our carbon reduction performance we compare the current year with 2008-9, when we first started to report on our carbon emissions.

We periodically adjust the 2008-9 figures to take account of significant estate changes such as schools converting to academies and site closures. We remove the 2008-9 carbon emissions for sites that have left the estate and add emissions for significant property additions.

This is done so that we can track genuine performance improvements rather than, for example, counting carbon emission reductions for schools that convert to academy as a reduction, when those emissions remain in the county even if they are no longer within our buildings portfolio.

Re-calculating these figures was done in 2014-15 and again in 2020-21. We will re-calculate the figures at the beginning of each 5 year carbon budget, which means that this will next be done in 2025-26. This will not alter the absolute science-based carbon reduction target. This means that any shortfall in meeting the target in any 5 year carbon budget period will need to be addressed within the subsequent 5 year carbon budget period and, equally, if more carbon is reduced than is required in the current carbon budget then a less steep reduction will be required during the next carbon budget.

2.6 Limitations

We have automatic meters installed across most of our estate, which allows us to report with a high level of accuracy on our electricity and gas related CO₂ emissions. Street lighting consumption is un-metered and the local distribution network allocates our usage based on the information we submit to them on our street lighting stock. Currently, we only hold limited information on combusted biofuel (i.e. biomass) as the purchasing of this fuel is delegated to individual sites and so we lack sufficient data to report. Our data for solar PV generation uses a mixture of accurately recorded generation data and estimates based on kWp system size for some 3rd party owned systems installed on schools prior to 2021, where we cannot obtain generation data from the installers.

From 2020-21, Scope 3 emissions have been expanded to include emissions associated with procurement of goods, works and services. Table 1 itemises how these have been calculated. As can be seen, Scope 3 emissions associated with our highways contract, corporate waste, water usage, staff business travel and transmission and distribution of electricity used by the Council are based on measured data and standard government conversion factors. The largest figure is from the rest of our supply chain and has been calculated by applying proxy values to the total expenditure, which gives an idea of scale rather than an exact figure. This is because it is not practical to gather exact data on every contract and purchase transaction. Consequently, the Council will focus on gathering robust data on emissions from contractors and suppliers, where the likely scale of their emissions and the ability of the Council to influence these emissions are greatest, for instance where the Council is a major client. As this data improves over time, so the carbon emission figures from procurement may vary significantly.

We have made the best efforts to report on our emissions using the data we have available at this time and, although we are confident in the quality of the data that we hold, there will always be scope for further improvement and adjustment in years to come.