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Introduction

Cheltenham Borough Council (CBC) declared a climate emergency in 2019 and committed to becoming a net zero council by 2030. This means that greenhouse gas (GHG) emissions relating to the council’s production and consumption activities will need be reduced to almost zero. The primary focus is the reduction of scope 1 and 2 emissions, and to explore the viability of compensating for the remaining emissions through mechanisms such as carbon-offsetting. Although efforts will be made to reduce our scope 3 emissions as much as possible, this is an area where the organization has less direct control.

Currently, there is no requirement for Local Authorities to report on their organisational carbon footprint. CBC, however, is committed to its net zero aims and the actions detailed in the Climate Emergency Action Plan and as part of this, publishing our annual carbon footprint. The emissions in this report are related to annual in-house consumption activities such as energy, fuel, and water. Calculating these emissions provides clarity around progress towards the CBC target. A clear plan to 2030 with costs and milestones to address the residual emissions for scope 1 and 2 with mitigation for residual emissions, alongside a strategic approach to address scope 3 emissions will be required.

Carbon dioxide (CO₂) emissions are the primary driver of global climate change. There are several less well-known greenhouse gases such as methane (CH₄), nitrous oxide (N₂O), and hydrofluorocarbons (HFCs). These various greenhouse gases have different global warming potentials in the atmosphere which, for ease, are converted into a single metric of carbon dioxide equivalents (CO₂e). This unit of measurement will be utilised throughout this report.

In line with the Department for Energy Security and Net Zero (DESNZ, 2023) reporting guidance, the collated emissions are categorised into Scope 1, Scope 2 and Scope 3 emissions as detailed below.

Table 1: Definition of Scope 1, 2 and 3 emissions.

Category	Description	Source
Scope 1	Direct emissions as a result of burning fossil fuels	Gas usage within Council, Ubico, Cheltenham Trust sites, miscellaneous properties and vehicle fleet gas/fuel use
Scope 2	Indirect emissions from purchasing energy for operations	Metered electricity use for Council, Ubico, Cheltenham Trust sites and miscellaneous properties
Scope 3	All other quantifiable indirect emissions produced in relation to the organisational activity	Staff commuting & business travel, water usage, procurement, 50% of airport electricity and ground operations, transmission and distribution of electricity

Organisational scope

CBC is liable for the emissions relating to a diverse range of properties. Cheltenham Trust sites include Cheltenham Town Hall, Pittville Pump Room, Leisure at Cheltenham, Prince of Wales Stadium and The Wilson Art Gallery & Museum. Smaller sites in CBC's portfolio include public toilets, pavilions, car parks, fountains, and other miscellaneous properties. CBC is currently responsible for purchasing the energy and water for these properties. The water supplier currently used is Water Plus, the main electricity supplier is Drax, and gas supplier is Corona. The miscellaneous properties which CBC is liable for vary year to year and only properties with annual energy payments of over £1,000 were considered in the emissions total. There are several energy suppliers for these sites.

Ubico Ltd has been responsible for the borough's household waste and recycling service since April 2012. This company itself is owned by several authorities, including CBC. The emission calculations in this report account for the fleet fuel use operating in the Cheltenham Borough, and energy and water supply at the depot and main site.

The waste and treatment considered is only the organisational waste produced by staff in the Municipal Offices. The refuse waste is collected by Ubico and treated at an 'energy from waste' site (Javelin Park). Food waste collections during this period were managed by Keenan recycling ltd and processed at an anaerobic digestion facility converting food waste to biogas. Cardboard, paper, drinks cans, plastic bottles, and mixed glass is managed by Printwaste, recycled in a closed loop process.

CBC has a 50% shareholding in Gloucestershire airport. Half of the emissions related to the site's electricity use, and ground fleet fuel use, have been accounted for by CBC. Fuel and energy data is current for the reporting year. **Cabinet Member Note: Further details will be disclosed prior to 11 December (Council reading of this report) which may be relevant for member decision making in this area.**

Operational emissions relating to Cheltenham Borough Homes (CBH) and the social housing stock is accounted for separately from this report, and therefore, the related activity has not been included in this year's totals. In cases where a property has a shared liability, the percentages below state which organisation accounts for what amount. Emission reported in previous years have been revised to reflect CBH reporting separately. The 2022 – 2023 carbon emission report for CHB is included as Appendix 2. With CBH's services being combined to form one organisation, further consideration will be required regarding the:

- a) approach to calculating the CBC/CBH's carbon emissions moving forward.
- b) a review of the scale and ambition associated with CBH emission reduction trajectory and plan.

Table 2: Percentage of CBC and CBH property liability.

Location	CBH	CBC
Municipal Offices	1.20%	98.8%
The Depot	9.52%	90.48%
Oakley Community Centre	56.11%	43.89%

Results

The carbon emissions detailed in this report have been calculated using the [2022 UK Government GHG Conversion Factors](#). Activity data, from April 2022 to March 2023, is multiplied by the relevant emission conversion factor, to calculate GHG emissions, which is then converted into tonnes of CO₂e. Full emissions breakdown is available in Appendix 1.

Total emissions:

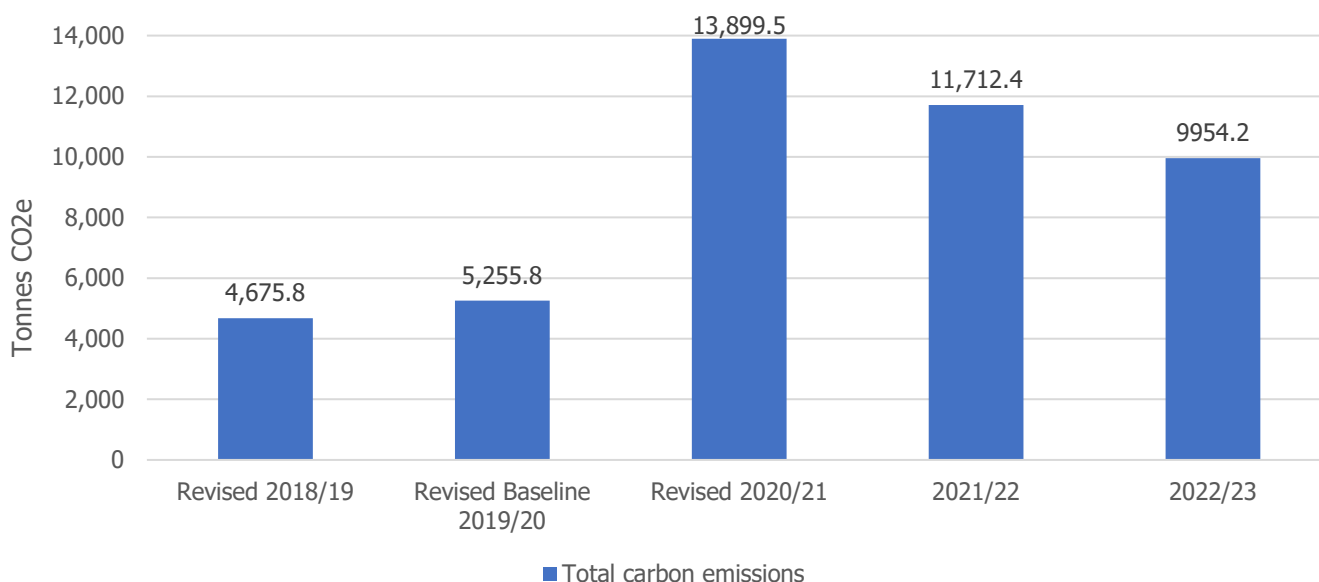


Figure 1: Total emissions from 2018 to 2023.

Progress analysis

Progress is measured relative to the revised 2019/20 emission baseline. This decision was made based on it being the year with the most complete and accurate data set, unaffected by the Covid-19 pandemic. The revised baseline figure of 5255.8 tCO₂e includes scopes 1, 2 and 3 emissions.

The 2022/23 annual emissions are 15% (1758.2 tCO₂e) lower than the previous year. However, declared emissions have increased by 89% (4698.4 tCO₂e) compared to the baseline year. This increase is largely due to the more thorough and accurate calculations now being used for measuring procurement emissions. Other increases can be attributed to the gathering of data, which is now more specific to CBC and its partner organisations, and less based on national averages. This will be explained within the individual scope analysis.

We believe it is essential to continuously seek the most accurate understanding of our carbon footprint, including by collecting more data and switching to local measures versus previous 'stand-in' national averages, even if this makes benchmarking year on year slightly more difficult. We hope that members appreciate the additional, more accurate, detail.

To get to net zero by 2030, using a straight-line trajectory, CBC would need to reduce emissions by an annual average of 14% from 2023 to 2030. Whilst the report demonstrates emission reductions of 15% compared to the year 2021/22, it is unlikely emission will continue to reduce at the same pace throughout. It is therefore essential that CBC maintains its commitments and clear corporate objectives around carbon reduction year on year, as the challenge of finding pathways to do so becomes more significant. Even though carbon emissions are currently reducing in line with the Council's net zero target, this report illustrates the scale of the challenge.

Scope analysis

In this section individual scope results will be illustrated.

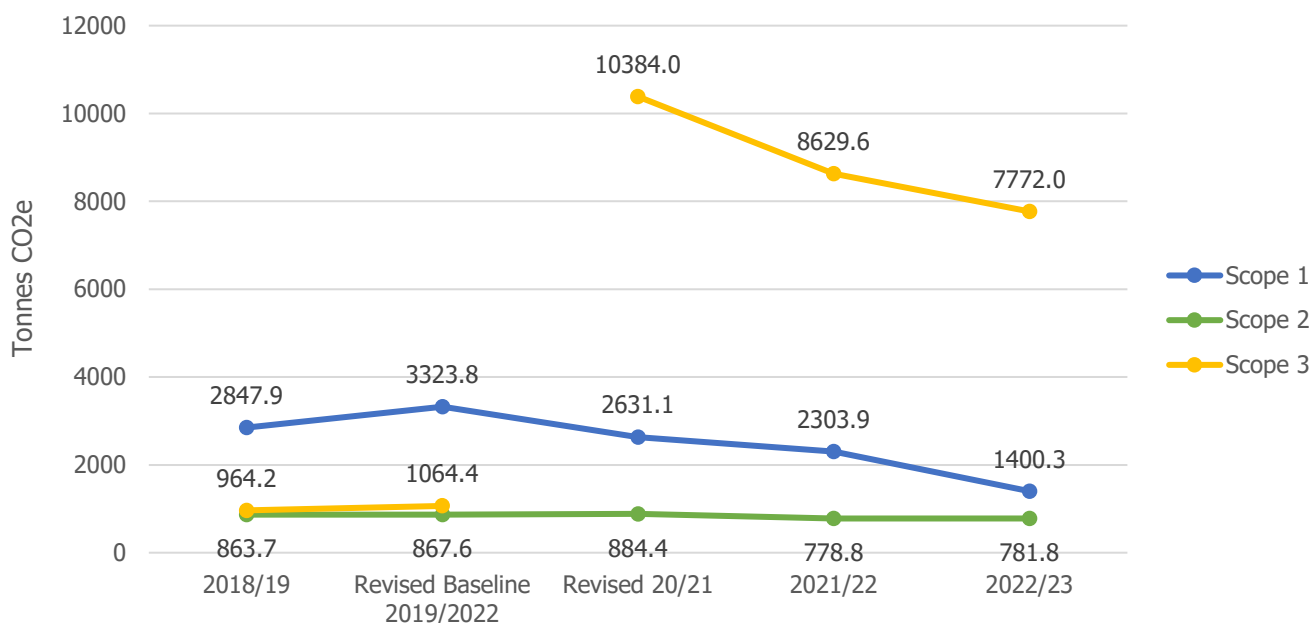


Figure 2: Individual scope comparison from 2018 to 2023.

Scope 1

Table 3: Source specific breakdown for change in Scope 1 emissions, comparing against prior year in tCO₂e and percent, rounded up to 1 significant figure.

Emission source	tCO ₂ e compared to previous year	Percentage change compared to previous year
Council gas	-108.2	-33.8%
Council fleet diesel	+6.8	+61.7%
Council fleet petrol	-6.8	-46.6%
Cheltenham Trust gas	-378.9	-45.8%
Ubico & Depot gas	-29.2	-27.4%
Ubico & Depot fleet diesel	-278.6	-32.1%
Ubico & Depot fleet petrol	-6.1	-28.6%
Ubico & Depot gas oil	-115.4	-97.0%
Ubico HVO	Not previously included	Not previously included
Miscellaneous Properties Gas	+8.3	+53.9%
Total Scope 1	-903.6	-39.2%

Table 4: Source specific breakdown for change in Scope 1 emissions, comparing against baseline year in tCO₂e and percent, rounded up to 1 significant figure.

Emission source	tCO ₂ e Compared to baseline year	Percentage change Compared to baseline year
Council gas	-154.6	-42.1%
Council fleet diesel	+7.4	+71.1%
Council fleet petrol	-10.5	-57.5%
Cheltenham Trust gas	-851.0	-65.5%
Ubico & Depot gas	-23.9	-23.6%
Ubico & Depot fleet diesel	-804.6	-57.7%
Ubico & Depot fleet petrol	-8.2	-35.1%
Ubico & Depot gas oil	-76.7	-95.6%
Ubico HVO	Not previously included	Not previously included
Miscellaneous properties gas	-6.1	-20.5%
Total Scope 1	-1923.5	-57.9%

The total of all scope 1 emission sources, shows a decrease of 903.6 tCO₂e, compared to 2021/22 and 1923.5 tCO₂e compared to the baseline year (Table 3&4). The specific emission sources to note are:

- As the Building Management System provides data from which to drive cost savings and energy efficiency measures, continued gas use reductions are expected.
- Replacement of a gas boiler with an electric boiler at the Municipal office has led to a reduction in Council gas use.

- 92% of the decrease in Cheltenham Trust gas is accounted for at the site, Leisure @ Cheltenham. The gas-fired Combined Heat Power (CHP) unit was non-functional for most of this reporting year. Though less gas is being consumed at the site, electricity use has increased in its place (Table 5).
- From April 2022 legislative measures were introduced in the UK to [restrict the use of red diesel](#) (referred to as gas oil in this report), this has resulted in the increase of diesel usage.
- The transition in from petrol to electrical grounds equipment has resulted in a decrease in petrol use.
- The transition to hydrotreated-vegetable oil (HVO) fuel and electrification of a portion of the Ubico fleet has decreased diesel and petrol use.
- Change in occupancy at a CBC owned site accounts for increase in miscellaneous property gas usage. This will vary year to year.

Scope 2

Table 5: Source specific breakdown for change in Scope 2 emissions, comparing against prior year in tCO2e and percent, rounded up to 1 significant figure.

Emission source	tCO2e compared to previous year	Percentage change compared to previous year
Council electricity	-17.6	-9.2%
Cheltenham Trust electricity	+8.7	+1.8%
Ubico electricity	+25.7	+36.0%
Recharged properties electricity	-3.5	-38.1%
Miscellaneous properties not included Electric	-10.3	-42.1%
Total scope 2	+3	+0.4%

Table 6: Source specific breakdown for change in Scope 2 emissions, comparing against baseline year in tCO2e and percent, rounded up to 1 significant figure.

Emission source	tCO2e compared to baseline	Percentage change compared to baseline
Council electricity	-63.4	-26.8%
Cheltenham Trust electricity	-28.3	-5.4%
Ubico electricity	+1.7	-1.8%
Recharged properties electricity	-10.0	-63.6%
Miscellaneous properties not included Electric	Not previously included	Not previously included
Total scope 2	-85.8	-9.9%

Against the 2019 baseline, overall electricity has increased 0.4% compared to the prior year and decreased 9.9% compared to the baseline (Table 5&6). Comments on the individual electricity uses are:

- Electricity purchased from Drax is supplied by renewable sources such as wind, bioenergy, photovoltaic and hydropower from the UK and Europe. This is backed by Renewable Energy Certificates and Renewable Energy Guarantees of Origin certificates. The figures presented are calculated on the 'location based' basis, which use grid-averages to present full emissions. If a 'market based' reporting method was adopted, emissions relating to electricity purchased from Drax would be 0 tCO₂e. Please see the [government's environmental reporting guidelines](#) for more information
- An increase in Ubico electricity can be attributed to the transition to electric vehicles, which are charged at the site
- The year 2022/23 was the first full year of operational running and event programming to include Cheltenham Festivals events post-covid. There have been additions such as the Heritage Café at Pittville Pump rooms and The Garden Bar in Imperial Gardens. This accounts for the increase in electricity use for Cheltenham Trust sites
- Important to note that there is a considerable decrease in electricity use when compared to the baseline year
- When considering the actions to needed to decarbonise CBC's portfolio, this heavily relies on large scale electrification of activity and the decarbonisation of the national electricity grid. The Climate Change Committee have reported that [a fully decarbonised power system is possible by the year 2035](#), however current rates of delivery and deployment of infrastructure need to be accelerated

Scope 3

Table 7: Source specific breakdown for change in Scope 3 emissions comparing against prior year in tCO₂e and percent, rounded up to 1 significant figure.

Emission source	tCO ₂ e compared to previous year	Percentage change compared to previous year
Mileage claims	+2.9	+38.4%
Rail travel	+0.1	NA
Council electricity (T&D)	-1.04	-6.16%
Miscellaneous (T&D)	-0.88	-40.1%
Twinning travel	0	0
Commuting (based on travel survey 2022)	-2.15	-2.9%
Waste	-0.80	-92.5%
Water from Council properties	+1.85	+43.5%
Cheltenham Trust electricity T&D	+2.24	+5.2%
Recharged properties electricity T&D	-0.3	-36%
Ubico electricity (T&D)	+2.6	+40.6%

Emission source	tCO2e compared to previous year	Percentage change compared to previous year
Purchasing of goods & services	-874.1	-10.4%
50% airport emissions from ground operations	+12.1	+36.7%
Total scope 3	-857.6	-9.9%

Table 8: Source specific breakdown for change in Scope 3 emissions comparing against baseline in tCO2e and percent, rounded up to 1 significant figure.

Emission source	tCO2e compared to baseline	Percentage change compared to baseline
Council mileage claims	-5.9	-35.9%
Council rail travel	-0.4	-79.1%
Council electricity (T&D)	-4.2	-20.8%
Miscellaneous (T&D)	-17.1	-92.9%
Twining travel	-2	-100%
Commuting (based on travel survey 2022)	+15.3	+27.0%
Waste	Not previously included	Not previously included
Water from Council properties	-2.4	-28.1%
Cheltenham Trust electricity T&D	+1.0	+2.4%
Recharged properties electricity T&D	-0.8	-60.6%
Ubico electricity (T&D)	+0.8	+10.2%
Purchasing of goods & services	+6784.9	+867.6%
50% airport emissions from ground operations	-61.8	-57.8%
Total scope 3	+6707.6	+630.2%

The methodology used to measure scope 3 emissions has become more accurate and relevant to CBC (Table 7). There has been a 9.9% decrease compared to last year. Although it may look like that there has been an increase in emissions from the baseline year, it is important to consider the various changes in calculating activity and emissions. Notable changes are:

- For the baseline year, staff commuting emissions were calculated using national averages which resulted in under-estimating. The external company Mobilityways conducted a staff travel survey in September 2022, which means the results would still be applicable for this reporting year and therefore have been rolled over. The decrease in these emissions, compared to the previous year, are due to a change in transport conversion factors.

Table 9: Top four emitting expenditure types.

Expenditure type
Business services
Information and communication technologies
Other manufactured products
Construction

- Compared to the baseline, procurement (purchasing of goods and services) emissions have increased a material amount. The figure used in the baseline year had been rolled over from 2018/19. This, however, only included approximately 16% of CBC's total expenditure.
- For the reporting year 2020/21, a newly introduced tool was used to calculate procurement emissions. Using categories devised by DEFRA, a specific carbon emissions factor was allocated to every pound of council expenditure, depending on the category of spend.
- For this reporting year, a conversion factor was devised by dividing the total spend in 2021/22, by the total emission reported for that year. This was then applied to the total spend for 2022/23 to provide the emissions figure.
- This process is entirely based on monetary value and does not account for individual contactor emissions. This was the only accessible methodology to provide a 'best estimate' for procurement. These results can be utilised to assess expenditure types with the highest emissions, to provide a framework on how to tackle emissions across the supply chain.
- T&D refers to emission related to transmissions and distribution of electricity. This accounts for the large-scale movement of electricity at high voltage levels from a power plant to a substation. Whereas power distribution is the conversion of high voltage electricity at substations to lower voltages that can be distributed and used. Therefore, the increase in T&D emissions are due to an increase in electricity, discussed above. Visit the [International Electrotechnical Commission website](#) for more information about transmission and distribution of electricity
- Water use across the portfolio has increased, however in a few cases there were leaks which have been resolved.
- By using recycling waste management practices instead of sending waste to landfill, reduces total emissions, this is based on material weight, therefore with employees working from home more, less waste at the Municipal office is expected.
- Gloucestershire Airport provided data current for this reporting year, the increase compared to last year can be attributed to using actual data, over incorrect estimates being rolled over.

Summary

- To get to net zero by 2030, using a straight-line trajectory, CBC would need to reduce emissions by an annual average of 14% from 2023 to 2030. The report demonstrates emission reductions of 15% compared to the year 2021/22
- Ensuring that such reduction rates continue year-on-year poses a significant challenge.
- Vast steps have been made to reduce scope 1 emissions, associated with fossil fuel use. A reduction of 903.6 tCO₂e is evident compared to the previous year and 1923.5 tCO₂e when compared to the baseline.
- Though an increase in scope 2 emissions is evident, this is small and reflects the electrification of CBC activity. This trajectory is also expected on the road to net zero, as we transition away from other higher carbon energy sources, and decarbonisation is reliant on the renewable energy mix in the national grid.
- A reduction in scope 3 emissions, however, will require a separated approach, relying on awareness raising to influence behavioural change internally and via procurement to influence suppliers externally (suppliers).
- Our scope 3 emissions have increased compared to the baseline due to implementation of a more accurate and robust method of calculating scope 3 emissions.

Further work

- Work has begun to put together a 2030 Net Zero Delivery programme, outlining costings against key priority items, that highlights the steps for addressing emission reduction across scope 1 and 2 emissions, alongside a robust plan to address mitigation of any residual emissions.
- Further analysis of scope 3 emissions continues to inform strategy and our plan to approach these.
- With CBH's services being combined to form one organisation, further consideration will be required regarding the:
 - Approach to calculating the CBC/CBH's carbon emissions moving forward.
 - A review of the scale and ambition associated with CBH emission reduction trajectory and plan.

Appendix 1

Scope 1 emission source	2022/23 tCO2e	2021/22 tCO2e	Revised 2020/21 tCO2e	2018/19 tCO2e	Revised baseline 2019/20 tCO2e	% change on revised baseline	% change from 21/22
Council gas	212.49	320.73	347.13	355.2	367.04	-42.11%	-33.75%
Council fleet diesel	17.70	10.95	14.53	28.2	10.35	71.05%	61.65%
Council fleet petrol	7.74	14.50	1.19	7.1	18.22	-57.53%	-46.62%
Cheltenham Trust gas	447.97	826.90	882.04	1246.0	1298.94	-65.51%	-45.82%
Ubico & Depot Gas	77.55	106.79	102.34	186.5	101.43	-23.55%	-27.38%
Ubico & Depot fleet diesel	589.86	868.47	1,125.37	970.3	1394.41	-57.70%	-32.08%
Ubico & Depot fleet petrol	15.24	21.35	26.85	27.7	23.48	-35.07%	-28.58%
Ubico fleet HVO	4.65	NA	NA	NA	NA	NA	NA
Ubico & Depot gas oil	3.55	118.93	101.96	26.9	80.26	-95.58%	-97.02%
Miscellaneous properties - gas	23.59	15.33	29.67	NA	29.7	-20.47%	53.90%
Total scope 1	1,400.3	2,303.9	2,631.1	2,847.9	3,323.8	-57.87%	-39.22%

Scope 2 emission source	2022/23 tCO2e	2021/22 tCO2E	Revised 2020/21 tCO2e	2018/19 tCO2e	Revised baseline 2019/20 tCO2e	% change on revised baseline	% change from 21/22
Council electricity	172.95	190.52	158.65	220.4	236.4	-26.83%	-9.22%
Cheltenham Trust electricity	491.96	483.24	441.95	524.8	520.2	-5.43%	1.80%
Ubico electricity	96.93	71.26	75.46	105.1	95.2	1.82%	36.02%
Recharge d	5.73	9.25	10.91	13.5	15.8	-63.64%	-38.05%

Scope 2 emission source	2022/23 tCO2e	2021/22 tCO2E	Revised 2020/21 tCO2e	2018/19 tCO2e	Revised baseline 2019/20 tCO2e	% change on revised baseline	% change from 21/22
properties electricity							
Misc. Properties - Electric	14.23	24.55	197.46	NA	NA	NA	-42.05%
Total scope 2	781.8	778.8	884.4	863.7	867.6	-9.89%	0.38%

Scope 3 emission source	2022/23 tCO2e	2021/22 tCO2E	Revised 2020/21 tCO2e	2018/19 tCO2e	Revised baseline 2019/20 tCO2e	% change on revised baseline	% change from 2021/22
Council mileage claims	10.52	7.60	5.87	18.0	16.40	-35.87%	38.38%
Council rail travel	0.10	0.00	0.00	0.6	0.46	-79.09%	2058.30%
Council electricity (T&D)	15.82	16.86	13.64	18.8	19.97	-20.79%	-6.16%
Misc. (T&D)	1.30	2.17	16.98	NA	18.4	-92.92%	-40.09%
Twinning travel	0	0	0	6.1	2.0	-100.00%	NA
Commuting (based on travel survey 21)	71.88	74.0	38	61.7	56.6	27.04%	-2.91%
Waste	0.07	1	NA	NA	NA	NA	-92.50%
Water from Council properties	6.09	4.24	8.47	NA	8.5	-28.13%	43.50%
Cheltenham Trust electricity T&D	45.00	42.8	38.0	44.7	44.0	2.38%	5.24%
Recharged properties electricity T&D	0.52	0.8	0.9	1.2	1.3	-60.64%	-35.97%
Ubico electricity (T&D)	8.87	6.3	6.5	9.0	8.0	10.23%	40.61%

Scope 3 emission source	2022/23 tCO2e	2021/22 tCO2E	Revised 2020/21 tCO2e	2018/19 tCO2e	Revised baseline 2019/20 tCO2e	% change on revised baseline	% change from 2021/22
Purchasing of goods & services	7,566.86	8441.0	10210.0	782.0	782.0	867.63%	-10.36%
50% airport emissions from ground operations	45.02	32.9	45.9	22.2	106.8	-57.84%	36.70%
Total scope 3	7,772.1	8,629.6	10,384.0	964.2	1,064.4	630.17%	-9.94%
Total 1, 2 and 3 scopes	9,954.2	11,712.4	13,899.5	4,675.8	5,255.8	-35.87%	-15.01%

Appendix 2

Cheltenham Borough Homes

Annual report on greenhouse gas emissions: financial year 2022/23

Introduction:

Table 1: Definition of Scope 1,2 and 3 emissions

Category	Description	Source
Scope 1	Direct emissions from sources owned or controlled by CBH, such as emissions from company-owned vehicles and fuel combustion in heating systems.	<ul style="list-style-type: none"> Property schemes managed by CBH that have a communal supply of gas (CBC owned properties only) – metered gas use Gas supply to CBH office spaces CBH fleet vehicle fuel use
Scope 2	Indirect emissions from purchased electricity, heat, or cooling consumed by CBH operations and facilities.	<ul style="list-style-type: none"> Metered electricity use for communal areas of properties managed by CBH on behalf of CBC and CBH owned properties Metered electricity use for CBH organisational office spaces
Scope 3	Indirect emissions from sources not owned or controlled by CBH, including emissions from business travel, employee commuting.	<ul style="list-style-type: none"> Business travel and staff commuting All housing stock including that managed on behalf of CBC and CBH owned properties Transmission and Distribution losses from all purchased electricity in Scope 2 Un-official off-sets from communal solar PV arrays

The following elements have not been reported by CBH in this year's report: waste, water use, purchasing of goods and services/procurement

Organisational boundary:

CBH operates out of offices around Cheltenham. These offices are within shared spaces and space is rented from either CBC or another landlord. CBH runs a fleet of vans as part of the maintenance team.

CBH staff work from several shared office spaces, some shared with CBC (Oakley Community Centre, The Depot, Municipal Offices) and one with the Hesters Way Neighbourhood Project and other parties. (Hesters Way Resource Centre). The percentage of responsibility for energy use based on floorspace occupied is displayed in the table below:

Table 2: Floorspace Percentage Occupied by CBH

Office Name	Floorspace percentage
Municipal Offices	1.20 %
The Depot	9.5 %
Oakley Community Centre	56.11 %
Hesters Way Resource Centre	25.11 %

CBH manages the Council's housing stock and directly owns a small number of properties. Emissions come from the generation of the energy used within these properties. Energy use in residential properties is usually

separated into regulated and unregulated energy.ⁱ Only regulated energy use is used in CBH GHG emissions calculations.

Some data presented in these carbon figures is based on assumptions, with figures based on estimates rather than actual figures.

Results:

Scope 1

Table 3: Breakdown of emissions by source within scope 1, compared against the 2019/20 baseline

Scope 1	2022/23 tCO ₂ e	2021/22 tCO ₂ e	2019/20 tCO ₂ e	% change on baseline	CBH Report 2019/20 tCO ₂ e
CBC properties: Communal heating (gas)	283.64	334.87	331.80	-14.51	361.34
CBH Offices (Gas)	19.55	24.71	24.67	-20.72	39.97
Vehicles (biodiesel)	0.04	0	0	-	-
Vehicles (diesel)	103.38	96.56	91.78	12.65	96.65
Vehicles (petrol)	0.15	0.57	0	-	-
Scope 1 Total	406.77	456.71	448.24	-9.25	497.96

The total of all the scope one emissions for 2022/23 shows a 9.25% reduction on the 2019/20 baseline. The gas purchased for heating is natural gas, and the biodiesel is Hydro-treated vegetable oil. Notable changes in emissions within scope one can be seen in:

- Reduction in communal gas heating within CBC sheltered scheme properties – This may be due to more accurate data collection and the use of actual reads from gas meters
- Reduction in all gas heating levels may also be due to the need to heat less due to the variation in heating season temperatures and the need to heat less in some year over others. Analysis of the degree day dataⁱ does indicate a slight reduction in average quarterly degree days in an annual comparison 2021/22 to 2022/23
- Increase in use of fleet diesel – The addition of 4 vans to the fleet for increased business usage, all of which run on biodiesel (HVO), has added an extra set of emissions that have not been accounted for in previous years – albeit minimal. The increase in diesel is likely to be due to higher mileages/usage and will be reviewed if it continues to rise

Scope 2

Table 4: Breakdown of emissions by source within scope 2 compared against the 2019/20 baseline

Scope 2	2022/23 tCO ₂ e	2021/22 tCO ₂ e	2019/20 tCO ₂ e	% change on baseline	CBH Report 2019/20 tCO ₂ e
All housing stock (Communal usage - electricity)	107.08	163.08	221.15	-52.22	263.42
CBH Offices (electricity)	11.06	18.95	27.76	-60.14	33.06
Scope 2 Total	118.15	182.04	248.90	-52.53	296.48

The total of all scope 2 emissions for 2022/23 shows a reduction of 52.53% on the 2019/20 baseline. The changes in emissions within scope 2 to note are:

- Use of electricity at CBH managed properties communal supplies
 - The reduction can be partially accounted for by the 'Greening of the Grid' where the energy being supplied for electricity use is less carbon intensive than previous years. There has been a percentage reduction of 11.2% for the 2023 GHG reporting conversion figureⁱⁱⁱ used for electricity when compared to the figure for reporting electricity in the 2020 GHG conversion factors^{iv}.
 - additional reduction is being investigated but could be, in part, due to estimated billing and hence not a true reduction used for electricity when compared to the figure for reporting electricity in the 2020 GHG conversion factors.

- additional reduction is being investigated but could be, in part, due to estimated billing and hence not a true reduction
- Use of electricity within CBH offices – The reduction here of 60.14% when compared to the baseline is attributed to a number of factors:
 - the reduction in office space; in 19/20 CBH had additional office space in the town centre (all energy use at this site was electrical)
 - the introduction of solar PV at one shared office (HWRC)
 - the introduction of hybrid working – where people now have the option to work from home, less energy is being used within offices.
 - it is also possible that there is a small reduction due to behavioural change, as people become more aware of the environmental impacts of using energy i.e., not leaving lights on etc.

Scope 3

Table 5: Breakdown of emissions by source within scope 3, compared against the 2019/20 baseline

Scope 3	2022/23 tCO2e	2021/22 tCO2e	2019/20 tCO2e	% change on baseline	CBH Report 2019/20 tCO2e
Milage (CBH business)	10.44	17.94	17.94	-41.81	17.94
Rail travel (CBH business)	0.02	1.12	1.12	-98.47	1.12
All housing stock (electricity/T&D)	9.14	14.43	16.81	-45.60	22.36
CBH offices (electricity/T&D)	0.93	1.68	2.11	-55.92	3.58
All housing stock	8,086.52	9,455.63	9,400.74	-13.98	9255.39
Solar PV off-set from communal supplies	-24.15	-19.21	-19.21	25.71	-19.21
Employee commuting	174.61	174.61	174.61	0	174.61
Scope 3 Total	8,257.51	9,646.08	9,594.00	-13.93	9,601.02

The total of all scope 3 emissions for 2022/23 –

- Housing Stock – The approach for calculating the emissions from the housing stock has changed in 2022-23. Previously it was obtained directly from SAP 2012 carbon emissions figures, but the emissions conversion factors used in SAP 2012 are fixed and do not reflect the changing emissions relating to the “greening of the grid”. From 2022-23 onwards emissions will be calculated using the SAP 2012 (or SAP 10.2 when this is released) software for energy consumption but with the current government (annual) emissions factors. The government emissions factor for electricity has dropped by over 50% due to the greening of the grid (since the SAP 2012 figures were set) hence the significant (13.98%) decrease in the overall emissions for the housing stock. It is expected that this can be split into CBC and CBH stock moving forward. Even with this reduction the housing stock makes up 94% of all CBH emissions and is thereby a central focus of works involving energy efficiency measures and retrofit that are being carried out by the organisation in trying to make Cheltenham net-zero carbon.
- Business travel claims – Mileage claims for business travel have fallen 41.81% in 2022/23 when compared to the 2019/20 baseline, this could be due to the increase of meetings and events being held via video links. It is measured via expenses claims so the extent to which claims are made (or not) needs to be investigated.
- Within Scope 3 there is the offset of energy that is produced using solar PV systems supplying energy to the communal supplies. The overall solar PV offset figure has been subtracted from the overall total. Solar PV systems supplying individual dwellings are accounted for within the SAP 2012 modelling of each property.
- Employee commuting – This is based on 2019/20 figures. A reasonable and viable annual methodology for the calculation of emissions created by employees traveling to and from work is to be developed.

Summary:

Table 6: Total emissions from 2022/23 compared to previous years, compared against the 2019/20 baseline.

Emissions	2022/23 tCO ₂ e	2021/22 tCO ₂ e	2019/20 tCO ₂ e	% change on baseline	CBH Report 2019/20 tCO ₂ e
Scope 1, 2 & 3 total emissions	8,782.43	10,284.83	10,291.14	-14.66	10,395.46

- The total emissions for 2022/23 for CBH shows a 15% reduction on the baseline total of 2019/20 and a 15% reduction on the previous year.
- Scope 3 continues to carry the bulk of CBH's carbon emissions, due to the energy use from the properties that CBH manages on behalf of CBC and accounts for 94% of all CBH emissions.
- It is important to note that there are some differences between the CBC report and the CBH report in terms of what sources area accounted for within the different scopes.
- The following has not been reported by CBH in this year's report:
 - Waste
 - Water use
 - Purchasing of goods and services/procurement

Further work:

- A reduction in overall emissions will continue because of the following changes:
 - For scope 3, work on the energy efficiency of CBH managed properties, including EWI, CWI, ASHP installation, Loft insulation etc. to reduce the energy demand of those homes therefore reducing the amount of carbon emissions.
 - For Scope 2, behavioural change in the use of electricity within offices will be the driving force behind reducing energy demand therefore carbon emissions. As the grid continues to become greener, and investment in green energy rather than brown energy grows, emissions across all of scope 2 will fall in future years.
 - For Scope 1, upgrading the CBH vehicle fleet to having several electric vehicles would see a reduction in emissions from diesel fuel use. The maintenance team will look to move towards more electric tools where their tools currently operate using petrol. The reduction of gas use for heating of CBH office spaces will be helped by better monitoring in the future, such as having separate meters for the space that is used by CBH compared to space that is used by others (CBC for example). Reducing emissions caused by heating communal areas at CBH sheltered schemes will come from better controls being installed for heating systems, therefore allowing it to be managed better – and talking to residents of the properties that use the communal spaces and working with them to understand when/why heating is being used. Whilst we will look at low carbon heating alternatives being installed as an option, a big consideration in this will be the running costs as tenants will see these costs in their service charge.