

**Carbon Footprint Report**

**2019/20**

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# **Background**

* 1. Chorley Council is committed to reducing Greenhouse Gas emissions across its estate and operations.
	2. To support this commitment Chorley Council declared a climate emergency in November 2019 and set the ambitious goal of being net-zero by 2030.
	3. Chorley Council is a member of the UK100, joining other local authorities to lead the UK’s response to climate change. UK100 brings together local authorities across the country to share knowledge, collaborate, and petition the UK government. The aim by working together is to create flourishing communities - seizing the opportunities of technology to create jobs and establishing a nationwide project of renewal, focused on local needs and ambitions.[[1]](#footnote-1)
	4. The**UK**governmenthas committed to reach**net zero** emissions by 2050. By acting sooner than the government’s goal we commit to do everything within our power to reduce our greenhouse gas emissions. We will work with residents and businesses in our communities to bring about a reduction in emissions and reach net zero as soon as possible.
	5. We pledge to understand our impact on climate change, prioritise where action needs to be taken and monitor progress towards our goals.
	6. We will collaborate with our communities to build consensus for the solutions we need to transition to a Net Zero society that delivers multiple benefits and is fair, just and works for everyone.
	7. To provide a baseline upon which to measure improvements the Council must first establish its current carbon footprint. This work will be used to inform the Council’s Climate Change Strategy.
	8. Within the Climate Change Strategy 2022 a priority was set to monitor the carbon footprint of the Council and Borough annually. This will monitor progress towards the 2030 goal and inform future work and actions.
	9. A carbon footprint is a measure of the greenhouse gas (GHG) emissions released by an individual, organisation or communities’ activities. The carbon footprint for the Council as an organisation and the borough have been calculated in this report.
	10. As a tier 2 local authority, the council does not have the level of direct control over the borough as it does over its own resources. Services under the control of Chorley Council include: Planning and building control; Environmental health; Housing; Parking; Parks and countryside; Waste management; and Leisure.
	11. Analysis of Borough emissions allows for the identification of key emitting sectors that the council can support to reduce carbon emissions.

# **Methodology**

## **Reporting Period**

* 1. Carbon emissions are measured over the financial year, therefore the period covered in this report is 1st April 2019 to 31st March 2020.

## **Baseline Year**

* 1. The financial year 2019/20 was chosen as the baseline year as it was the most readily available data set following the Council’s climate emergency declaration. The Borough data is published with a two-year time lag therefore 2019 is the most recent dataset for the Borough as a whole.
	2. Choosing 2019/20 as the baseline year also predates the effects of the global COVID-19 pandemic. As with most organisations COVID-19 had a significant impact upon our activities, due to people working from home, events and meetings cancelled and closure of our offices and leisure centres etc. This would mean our baseline carbon footprint would be artificially low. Using 2019/20 will also allow us to see the impact of the pandemic and associated changes in working practices on our footprint going forwards.

## **Carbon Dioxide Equivalent (CO2e)**

* 1. Carbon dioxide is not the only greenhouse gas; there are other key greenhouse gases that contribute to global warming, these are: Methane, Nitrous Oxide, Fluorinated gases (e.g. Hydrofluorocarbons, Perfluorocarbons and Sulphur Hexafluoride) and Water Vapour.
	2. Even though water vapour is the most common greenhouse gas, it is a natural part of the atmosphere and water cycle, so monitoring is not necessary.
	3. Each Greenhouse Gas varies in potency, which relates to their ability to trap heat in the atmosphere measured against the time they are present in the atmosphere. Carbon dioxide is the most common greenhouse gas, but it is not the most potent or powerful.
	4. For example, over a timescale of 20 years methane is around 80 times more potent than carbon dioxide. This is because the lifetime of methane in the atmosphere is about 12 years, and so its global warming potential reflects this. Longer lasting gases such as nitrous oxide can stay in the atmosphere for over 100 years and so its global warming potential remains high over a longer period, about 265 times more potent than carbon dioxide over 100 years.[[2]](#footnote-2)
	5. To make things easier to measure and compare the values shown in a carbon footprint are standardized relative to carbon dioxide and expressed as a single value termed the carbon dioxide equivalent (CO2e).
	6. CO2e accounts for the seven main Greenhouse Gases that contribute to climate change, as detailed in Table 1.
	7. CO2e conversion factors are set by the Department for Business, Energy & Industrial Strategy (BEIS) on an annual basis.

Table 1: Summary of the seven main Greenhouse Gases and the sources for these emissions.

|  |  |
| --- | --- |
| **Greenhouse Gases** | **Main Sources of Greenhouse Gases** |
| Carbon Dioxide (CO2) | Coal, Oil and Gas (Fossil Fuels)Manufacturing Cement ProductionDeforestation |
| Methane (CH4) | Livestock Organic waste/Landfill escapeEmitted during production of fossil fuels |
| Nitrous Oxide (N2O) | Agriculture fertiliser Waste management Fossil fuel burning |
| Fluorinated Gases (F-Gases):-Hydrofluorocarbons (HFCs)-Perfluorocarbons (PFCs)-Sulphur Hexafluoride (SF6)-Nitrogen Trifluoride (NF3) | Refrigeration Aerosols  |

## **Council Emissions Analysis**

### **Scope**

* 1. Greenhouse gas emissions are categorised into three groups known as ‘Scopes’ which are the internationally used tool, defined within the Greenhouse Gas Protocol. Definitions and activities encompassed by each scope can be found in Table 2.

Table 2: Summary of the emission sources included within the Councils carbon footprint within each scope

|  |  |  |
| --- | --- | --- |
| Greenhouse Gases Emission Scope | Definition of Scope | Activities |
| Scope 1 | **Direct emissions** from sources owned or controlled by the organisation | Gas for heating Council buildingsFuel consumption from council fleetAir conditioning leaks |
| Scope 2 | **Indirect emissions (owned)** produced by consuming purchased energy from a utility provider | Electricity for building use |
| Scope 3 | **Indirect emissions (not owned)** produced from Council activities but at sources not owned or controlled by the Council | Staff business travelTransmission and distribution losses within supply chain Well to Tank (WTT) emissions during energy production Waste disposal |

* 1. Scope 1 are “direct emissions” as they result from us generating greenhouse gases as a regular part of our day-to-day activity. For example, it includes the gas we burn onsite to heat our offices and swimming pools as the CO2 is released locally.
	2. Scope 2 are “indirect emissions” as they result from the energy we purchase to undertake our day-to-day work. For the council this includes the electricity purchased from the Grid, where the generation of greenhouse gases is by an energy company at another location.
	3. Scope 3 are also “indirect emissions” though this time includes all activities not part of Scopes 1 and 2 but which still have an environmental impact. This includes things such as, purchased goods, business travel to meetings or waste disposal. Scope 3 generally has the biggest contribution to a carbon footprint.

### **Missing data**

* 1. The Council has worked to collect all available data to ensure the Council’s carbon footprint is accurate and well informed. It is noted that some data is unavailable, missing or excluded, details of these can be found below in Table 3.
	2. The effect of this missing and excluded data is likely to have a minimal impact on the overall carbon footprint.

Table 3: Missing data for the 2019/20 carbon footprint calculations

|  |  |  |
| --- | --- | --- |
| Scope | Unavailable Date | Outcome |
| 1 | 2019 Annual Fleet Miles  | An annual average was calculated with the fleet miles of one month for calculations |
| 1 | Assets which the Council own but are not in charge of electricity or gas (*e.g. rental properties, where tenant is responsible for utility bills*) | Excluded due to lack of control over sources |
| 3 | Recycling data for some assets not held | Excluded due to lack of figures, overall waste and recycling emissions still included |
| 3 | Procurement and material use  | Excluded due to lack of data |
| 3 | Business use of public transport  | Excluded due to lack of data  |

### **Conversion factors**

* 1. The methodology behind the calculation of GHG emissions is through the application of documented and approved GHG emission conversion factors. These factors are calculated ratios which relate emissions to a proxy measure of activity from an emissions source.
	2. Further detail on the methodology and emissions factors can be found on the [UK Government website: conversion factors for company reporting of greenhouse gas emissions](https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting).
	3. The emission source data used, also known as activity data, is multiplied by the relevant emission factor to calculate CO2e equivalent emissions

CO2e= activity data x emission conversion factor

* 1. Emission factors for the 2019 period can be found on the [UK Government website: Greenhouse gas reporting: conversion factors 2019](https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2019).

## **Borough emissions**

### **Data Source**

* 1. Each year the Department for Business, Energy and Industrial Strategy (BEIS) produces an estimate of carbon dioxide emissions at a local authority and regional level. These statistics provide the most reliable and consistent breakdown of CO2 emissions across the country, using nationally available datasets.
	2. The data covers estimated emissions for the period between 2005 and 2019. This is due to a two-year time lag between publishing figures.
	3. The raw data is published on the [UK Government website: carbon dioxide emissions national statistics](https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2019).

### **Sub sectors**

* 1. The emission sources for each borough are split across three main end-user sectors: Industry and Commercial, Domestic and Transport. These are further broken down to individual subsectors, as detailed in Table 4 below.

Table 4: Main sectors and subsectors representing emission sources across the borough.

|  |  |  |
| --- | --- | --- |
| Industrial and Commercial  | Domestic  | Transport  |
| - Electricity - Gas - Large Industrial Installations- Other Fuels - Agriculture  | - Electricity - Gas - Other Fuels  | - A Roads - Minor Roads - Other  |

* 1. An additional sector is Land Use, Land Use Change and Forestry (LULUCF). This is omitted from the main dataset, as BEIS do not consider this sector to be within the scope of local authorities.

# **Results**

## **Council Emissions**

* 1. The total Chorley Council emissions for 2019/20: **1,689.7 tonnes** CO2e.
	2. The main sources of emissions across each activity are shown below in Tables 5 and 6.
	3. The three most significant sources of emissions across 2019/2020 were:
1. Mains Gas: 64% of total emissions (1,079.6 tonnes Co2e)
2. Mains Electricity: 31% of total emissions (529 tonnes CO2e)
3. Fleet Transport: 2% of total emissions (37.2 tonnes CO2e)
	1. Well to tank, transmission and distribution losses describe the proportion of gas and electricity purchased by the Council that is lost during the production, processing, and delivery to the point of use (e.g. lighting or heating). While all carbon emissions are important, these are outside of our control and are a characteristic of the grid. Fortunately, they are comparatively small and will be reduced through activities related to energy efficiency and moving away from using gas for heating.

Table 5: The main sources of CO2e emissions across the Chorley Council estate and operations.

|  |  |  |  |
| --- | --- | --- | --- |
| Source | Scope (1, 2 or 3) | kg CO2e | Percentage of overall emissions |
| Heating (Gas for buildings) | 1 | **1,079,572.34** | **64 %** |
| Fleet Transport (Diesel and Petrol) | 1 | **37,205.34** | **2 %** |
| Building Energy (Electricity) | 2 | **529,004.58** | **31 %** |
| Waste disposal | 3 | **27,088.08** | **2 %** |
| Business Travel | 3 | **16,843.26** | **1 %** |
| Gas WTT | 3 | **3.36** | **0 %** |
| Electricity WTT | 3 | **2.63** | **0 %** |
| Electricity Transmission and Distribution Losses | 3 | **1.11** | **0 %** |
| Total: |  | **1,689,720.70** | **100%** |

Table 6: Proportion of Chorley Council emissions per scope.

|  |  |  |
| --- | --- | --- |
| Scope  | kg CO2e | Proportion of emissions  |
| Scope 1 | 1,116,778 | 66%  |
| Scope 2 | 529,004 | 31%  |
| Scope 3 | 43,938 | 3% |

## **Borough Emissions**

* 1. The total CO2e emissions produced from fuel (gas, electricity, coal, bioenergy, petrol, diesel) used within the borough for 2019 was 630.9 kt CO2 of which transport was the largest contributing sector, as shown in Figure 2.[[3]](#footnote-3)

Figure 1: Volume of CO2e Produced in Chorley Between 2005 and 2019, divided by sector contribution

Figure 2: Chorley Borough total fuel use and sector contribution between 2005 and 2019.

* 1. Estimated total emissions for Chorley Borough in 2019 was 651.9 kt CO2e.
	2. UK Government data shows that between 2005 and 2019 CO2e emissions have been gradually decreasing, as shown in Figure 4. This is largely due to the wider decarbonisation of the national energy system, particularly the electricity grid.
	3. With an estimated 2019 population of 118,600 this equates to 5.5 t CO2 per capita.

Figure 3: Chorley borough CO2 emissions between 2005 and 2019.

Date Source: <https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2019>

# **Moving Forward**

* 1. This report presents the baseline figures for comparison in future years and will be used to inform actions within Climate Change Strategy updates and progression of decarbonisation activities.
	2. The Council’s carbon footprint will be monitored annually with future and update reports will be produced moving forward

## **The Council**

* 1. With gas and electricity accounting for over two thirds of the Council’s emissions, decarbonisation of the assets is essential. The Council will determine the feasibility and carbon reduction of adding carbon reducing measures to the main Council assets.
	2. The third highest emission source was the fleets transportation. This data source was averaged due to the lack of a full annual set, measures will be taken so that a more accurate dataset can be collected in 2022. The Council will continue to progressively electrify the fleet as a long-term action within the climate change programme.

## **The Borough**

* 1. Whilst overall emissions from the borough are reducing; there is work to be done within the community and which businesses can take to work towards lowering carbon emissions across the Borough.
	2. Chorley Borough has a large proportion of through traffic due to major roads and motorways passing through. As a local authority we cannot take action to reduce through traffic emissions. However, we can promote sustainable transport options for residents and local businesses, this is reflected within the strategy.
	3. We will continue to work with and support the community to lower the emissions from the Borough.
1. Link to UK 100 website <https://www.uk100.org/> [↑](#footnote-ref-1)
2. *Global warming potential taken from Table 8.7 of the Working Group I’s contribution to the IPCC’s Fifth Assessment Report (2013).* [↑](#footnote-ref-2)
3. Date Source: UK Government published data, <https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2019> [↑](#footnote-ref-3)