Environmental Sustainability

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OXFORD CITY COUNCIL

Greenhouse Gas Emissions from Local Authority own estate and operations

Reporting Period 2022-23

Oxford City Council

Date: June 2024
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Greenhouse Gas Emissions (GHG) Report from the Council's own estate and operations covering the 2022/23 financial year

Foreword

This report includes our annual review of Oxford City Council's progress in reducing greenhouse gas emissions. Each year we publish an annual update report detailing the total carbon emissions from the Council's own estate and operations for the previous financial year. This report covers all scope 1 and 2 emission sources relevant to the Council and some scope 3 sources - this includes all buildings and operations where we pay the energy, fuel, and water bills.

Within this year's 2022/23 report we can see that there was a 5% decrease in emissions when compared to the 2021/22 reporting period - with annual emissions totalling 5,994 tCO2e. Within our Carbon Management and Implementation Strategy (Carbon Management Plan 4: Zero Carbon Council by 2030) it was noted that we need to achieve a 10% year-on-year reduction to ensure we meet our net zero target of 2030. Therefore, for this reporting period that target has been missed, however, it is forecasted that the completion of a multi-million project to install heat pumps at four of our leisure centres, including Hinksey outdoor pool, will achieve a significant fall in emissions for the next 2023/24 reporting period.

When taking a wider look at our journey, we can observe a 25% decrease in emissions over the past five years (2018/19 - 2022/23), and if we look at longer term trends, since our first annual report in 2014/15 we have achieved a 63% reduction in carbon emissions.

We publish this annual data to be transparent and open about our journey to net zero and the work we are doing within our own organisation to address the climate emergency. We remain committed to achieving our 2030 goal and will ensure meaningful carbon reduction measures continue to be implemented to support this target.

This year we have continued to utilise grants and schemes to enable us to implement carbon reduction measures across our sites. The Salix Recycling Fund, which the Council has utilised since 2008 to implement nearing on 100 reduction measures across our estate has announced its closure by March 2025. The Council has several Salix funded projects planned for the 2024/25 financial year - which will make use of the remaining funds available from this scheme. As we look forward, we have several other projects planned for this year which focus on how we can further decarbonise heart across our estate, these projects utilise the Low Carbon Skills Fund and the Public Sector Decarbonisation Scheme.

As an organisation, Oxford City Council is responsible for just 1% of Oxford's overall emissions. That is why it is critical for the Council to continue to work together with partners via the Zero Carbon Oxford Partnership to tackle emissions as a city with a collective goal of achieving a Net Zero Carbon City by 2040.

I am pleased with our progress in this reporting year, and I am looking forward to working with officers, partners, councillors, and members of the public on continuing to tackle the climate emergency in Oxford.

Councillor Anna Railton, Cabinet Member for Net Zero and Climate Justice

Greenhouse Gas Emissions (GHG) from Local Authority own estate and operations covering the 2022/23 financial year

1. Introduction

Oxford City Council is currently delivering its fourth Carbon Management Strategy and Implementation Plan (Carbon Management Plan 4: Zero Carbon Council by 2030) covering the 9 years from 2021/22 to 2029/30 mapping a route to a Net Zero carbon council - driving down energy, fuel and water costs and their associated carbon dioxide emissions.

The council unanimously approved a motion in January 2019 declaring a climate emergency and subsequently held the UK's first Citizens' Assembly on Climate Change at a city level.

The Council has set the following targets and ambitions:

1. **Net Zero carbon Council by 2030 or sooner**: delivered by an acceleration of the reduction in the Council's underlying emissions. This applies to greenhouse gas emissions (CO2e) from heating and powering our buildings, fuelling our fleet vehicles and plant, through to our business travel and water consumption.

2. **Net Zero carbon City by 2040** recognising that the Council is responsible for 1% of city-wide emissions, this vision is to be delivered by working in partnership with key stakeholders in the city to galvanize action on climate change, with an emphasis on the two largest sources of emissions - buildings and road transport. Roadmaps have been developed and the Zero Carbon Oxford Partnership – ZCOP has been formed. *(See: Roadmap and Action Plans - Zero Carbon Oxford Partnership)*

This report deals with the Council's emissions from its own estate and operations.

The bulk of the Council's CO_2 emissions come from:

- Heating and electricity consumption in Council operational sites (e.g. office buildings, depots, leisure centres, car parks, sports pavilions, public conveniences, and other miscellaneous sites)

- Fuels consumed in Council fleet vehicles (e.g. refuse trucks, vans, and pool cars), non-road going vehicles and plant (e.g. lawnmowers, chippers, and portable heaters)

- Travel for business purposes (e.g. use of public transport, fuel consumed in staff-owned vehicles to conduct Council business – *note average petrol car - unknown fuel conversion factor used for staff vehicles - due to not being materially significant to total CO2 emissions reported to determine fuel type for each individual vehicle*)

- Operational waste deposited in landfill sites (generated from Council operations) and associated with water use.

This report provides GHG emissions data (in tCO_2e) for the reporting period 2022/23 as well as including details of emissions from the previous 3 years 2019/20, 2020/21 and 2021/22. CO_2e is a metric measure used to compare the emissions from various greenhouse gases based on their global warming potential (GWP). By converting

amounts of other greenhouse gases (methane, nitrous oxide etc) to the equivalent amount of carbon dioxide with the same global warming potential.

A summary of 2022/23 GHG emissions included in this report are outlined in Table 1 below. Sections 5 and 6 outline the scope of emissions coverage in this report. Section 7 onwards outlines carbon emissions trends over the past 5 reporting years, including the current reporting year 2022/23.

Total GHG emissions for period 1 April 2022 to 31 March 2023	
Scope	**Tonnes of CO_2e**
Scope 1	4,032
Scope 2	1,723
Scope 3	198
Total core GHG emissions	**5,954**

***Table 1**: Total GHG emissions for the period 2022/23*

2. Organisation Information

Oxford City Council is a non-metropolitan district council as defined by Section 1(4) and Schedule 1 Part II of the Local Government Act 1972. The Local Authority main contact details are Oxford City Council, Town Hall, St Aldates, Oxford, OX1 1DS.

3. Reporting period

1 April 2022 – 31 March 2023.

4. Reporting approach

We have based this report on the Government's Guidance on how to measure and report greenhouse gas emissions as outlined in the Environmental Reporting Guidelines (publishing.service.gov.uk)

5. Organisational boundary

The scope of this report covers all Council buildings and operations as well as water consumption and disposal and business travel.

The following emissions sources are covered:

- Electricity and gas consumed in all buildings and sites (e.g. emissions from our operational buildings and other sites office buildings, depots, leisure centres, car parks, sports pavilions, public conveniences, and other miscellaneous sites).

- Fuel consumption from fleet vehicles, non-road going vehicles and plant.

- Miles or kilometres travelled in staff-owned vehicles and estimated to be travelled in public transport for business purposes.

- Water consumed in Council operational buildings and other miscellaneous sites within the scope of the Council's influence and operations.

In last year's Greenhouse Gas Report the proposal to expand scope 3 emission reporting was included. Scope 3 sources not currently included in the Council reporting

include operational waste, staff commuting, procurement related emissions from purchased goods and services, leased commercial properties and the council owned housing stock where tenants are paying energy and water bills.

Commitment to this proposal remains and we are pleased to announce in September 2024 we will initiate our first staff commuting survey, which will collect data on the distance, mode, and frequency of employee's commutes into the council's working spaces. This will give greater visibility of our contribution to transport emissions and will allow the council to deploy evidence-based employee commute related carbon reduction initiatives. Additionally, in the next 2023-24 GHG report we will calculate and report on the Council's operational waste.

6. Operational scopes

We have measured our total scope 1, 2 and some scope 3 emissions covering the areas outlined in the organisational boundary (see 5. above). Further details of the emissions we are reporting on here are outlined in Table 2 below.

<table>
<tr><th>Scope One</th><th>Scope Two</th><th>Scope Three</th><th>Not included</th></tr>
<tr><td>Fuel used to heat our buildings (e.g. natural gas, gas oil, kerosene, and liquid petroleum gas)</td><td rowspan="5">Purchased electricity for our buildings and other electricity consuming sites (e.g. offices, leisure centres, depots, car park and public conveniences).</td><td rowspan="2">Electricity (transmission and distribution factors)</td><td>Perfluorocarbons (PFC), hydrofluorocarbons (HFC) and sulphur hexafluoride (SF_6)</td></tr>
<tr><td rowspan="2">Fuel used in council vehicle fleet and to power non-road going vehicles and plant such as lawnmowers and, chippers.</td><td>Staff commuting</td></tr>
<tr><td>Business mileage by car</td><td>Emissions from Council operational waste deposited in landfill sites</td></tr>
<tr><td rowspan="2">Fuel used in waste collection vehicle fleet</td><td>Business mileage by public transport (bus and train)</td><td>Emissions from Leased commercial properties or housing stock where tenants are paying energy/water bills.</td></tr>
<tr><td>Water consumed (supply and treatment)</td><td>Total indirect emissions: e.g. due to upstream emissions from production and delivery of fuel to power stations or transport fuel stations.</td></tr>
<tr><td></td><td>Half-hourly metered and non-half-hourly metered electricity supplies (i.e. HH, P272 meters and Unmetered Supplies)</td><td></td><td>Emissions from goods and services purchased and employed to conduct council business and operations. Council financial investments.</td></tr>
</table>

Table 2: *Operational scopes*

As stated, our next 2023-24 Greenhouse Gas Report will expand its scope to include staff commuting and operational waste related emissions - we seek to continue to widen the scope of reported emission sources in future years.

7. 2022-23 Emission Summary

A summary of underlying GHG emissions for the current reporting year (2022/23) is outlined in Table 3 below. Headline figures over the last five years including the current reporting year are detailed in Table 4 and the stacked bar chart in Chart 1. A more detailed breakdown of underlying GHG emissions and sources for the previous three years can be found in Appendix 1.

Our top three emitters for the 2022-23 period were:

1. Gas for heating
2. Purchased electricity
3. Fuel use in fleet

2022/23	Total Consumption Units	tCO_2	tCO_2e
Scope 1			
Gas consumption (kWh)	13,505,127	2,460.13	2,464.86
Gas Oil (litres)	1,667.30	4	4
Kerosene (litres)	0	0	0
LPG (litres)	0	0	0
Diesel (litres) - average biodiesel blend	604,318	1,523	1,545
Petrol (litres) – (average biofuel blend)	7,687.20	16.51	16
HVO (litres)	14,972		0.5
	Total Scope 1	4,004	4,032
Scope 2			
Purchased Electricity (kWh)	8,914,777	1,704	1,723
Scope 3			
Electricity - Transmission and distribution	8,914,777	157	156
Average petrol car (miles) - unknown fuel	42,367	11	11

Passenger travel – train, national rail (km)	3,619	0	0
Passenger travel – average local bus (km)	431	0	0
Water supply(m3)	69,316		10
Water treatment(m3)	69,316		18
	Total Scope 3	***167***	**198**
	Totals	**5,877**	**5,955**

Table 3: *Underlying GHG emissions for the period 1 April 2022 to 31 March 2023*

Heating degree days *(to base 15.5°C) for the Thames Valley Region for the 2022/23 reporting period were 1881.*

* Defra emissions factors guidance – published June 2022 used
Greenhouse gas reporting: conversion factors 2022 - GOV.UK (www.gov.uk)

We have referenced heating degree day figures (to base 15.5 °C) for each reporting year as a rough indication of the severity of the heating season. Heating degree days are a measure of how much (in degrees), and for how long (in days), the outside air temperature was below a certain level. They are commonly used in calculations relating to the energy consumption required to heat buildings[1]. This is not a precise assessment on a building per building basis accounting for heating loads, building fabric and other factors that may influence heating related consumption but solely used as an indicator of general heating demand. A lower degree day number indicates a less severe heating requirement and may have an influence on quantity of gas used or electricity if used for heating.

[1] https://www.degreedays.net/introduction

Scope	Source	2018/19	2019/20	2020/21	2021/22	2022/23
Scope 1	Gas Consumption	3,008	3,138	1,758	2,802	2,464
Scope 1	Gas Oil	94	86	92	86	4
Scope 1	Kerosene	10	10	11	0	0
Scope 1	LPG	0	0	0	0	0
Scope 1	Diesel	1,986	1,869	1,715	1,786	1,545
Scope 1	Petrol	42	42	20	21	16
Scope 1	HVO	0	0	0	0	1
Scope 2	Electricity - Purchased	2,259	1,995	1,210	1,442	1,723
Scope 3	Electricity - Transmission and Distribution	193	169	104	128	157
Scope 3	Average Petrol Car - Unknown Fuel	22	19	19	9	11
Scope 3	Passenger Travel - Train, National Rail	3	3	3	0	0
Scope 3	Passenger Travel - Average Local Bus	1	1	1	0	0
Scope 3	Water Supply	41	30	17	14	11
Scope 3	Water Treatment	84	62	36	26	18
Total		7,741	7,425	4,985	6,314	5,995
Scope 1		5,140	5,146	3,595	4,695	4,032
Scope 2		2,259	1,995	1,210	1,442	1,723
Scope 3		342	284	180	177	198

Table 4: *Summary of annual underlying GHG emissions (tCO2e) for period 1 Apr 2018 to 31 March 2023*

The data from Table 4 is further detailed in the stacked bar chart below to show the overall trends in underlying emissions at the appropriate annual conversion factors supplied:

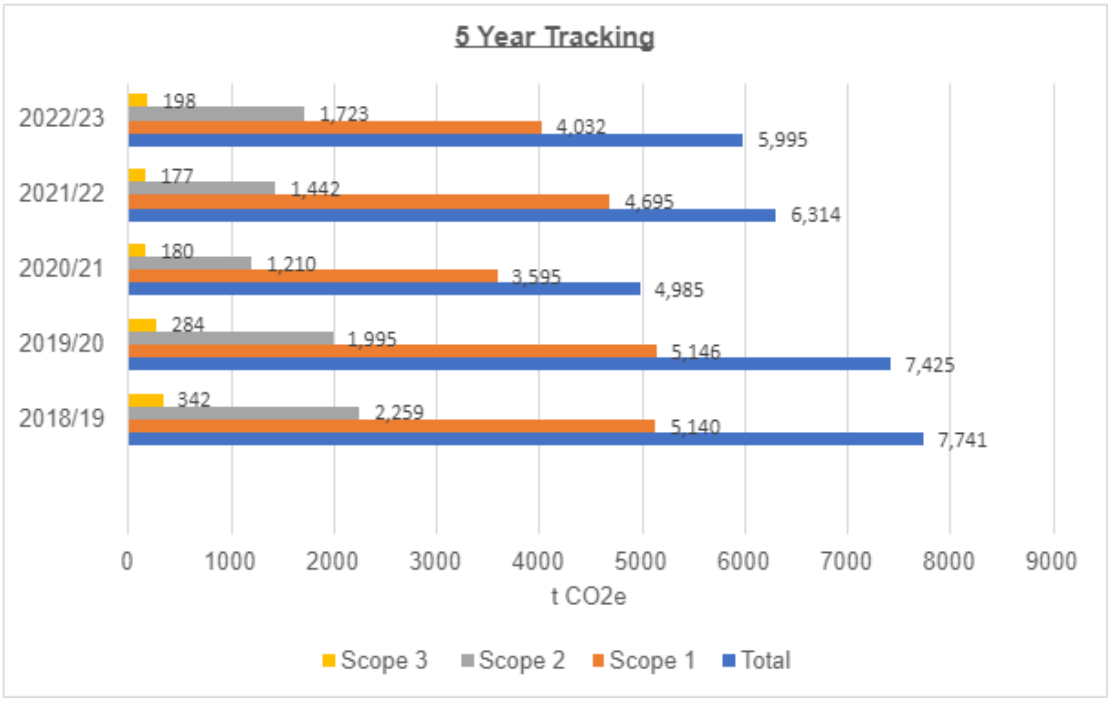

Chart 1: *Bar chart showing GHG emissions (tCO2e) from all three scopes for the past five reporting years (2018/19 to 2022/23).*

8. Base Year

Our GHG reporting process follows the Net Zero by 2030 trajectory outlined in our Carbon Management Plan 4 approved in February 2021 ("Zero Carbon Council by 2030"). The plan commits to Net Zero by 2030 from a 2019/20 base year.

9. Targets and progress towards them

In the Carbon Management Plan covering this reporting period (2021 - 2030), the Council CO_2 reduction target for 2022/23 is to reach Net Zero Carbon by 2030.

In terms of year-on-year assessment of underlying emissions, our total GHG emissions in 2022/23 (scopes, 1, 2 and 3 as outlined in Sections 6 and 7 above) decreased by ca 5% compared to the previous year 2021/22. During this period gas consumption was down 11% and electricity consumption increased by 31% this can be attributed to the completion of the installation of heat pumps across four of our leisure sites in early 2023 which are the council's highest energy users. Heat pumps have electricity driven compressors which increase a site's electricity consumption, however, due to the declining carbon intensity of the grid, emission savings are gathered when compared to the most energy efficient boilers. These carbon emissions savings will continue to increase as the grid decarbonises.

Heating degree days (at 15.5 degrees base temperature) during the reporting period 2022/23 was = 1881, in comparison to 2021/22 which was = 1945 this sees a 3%

reduction in heating degree days, which could have aided a reduction in reducing gas related carbon emissions due to lower external temperatures.

Over the period 2018/19 to 2022/23 our underlying CO_{2e} emissions have decreased by 25%. Chart 2 below maps current progress towards the Net Zero by 2030 target.

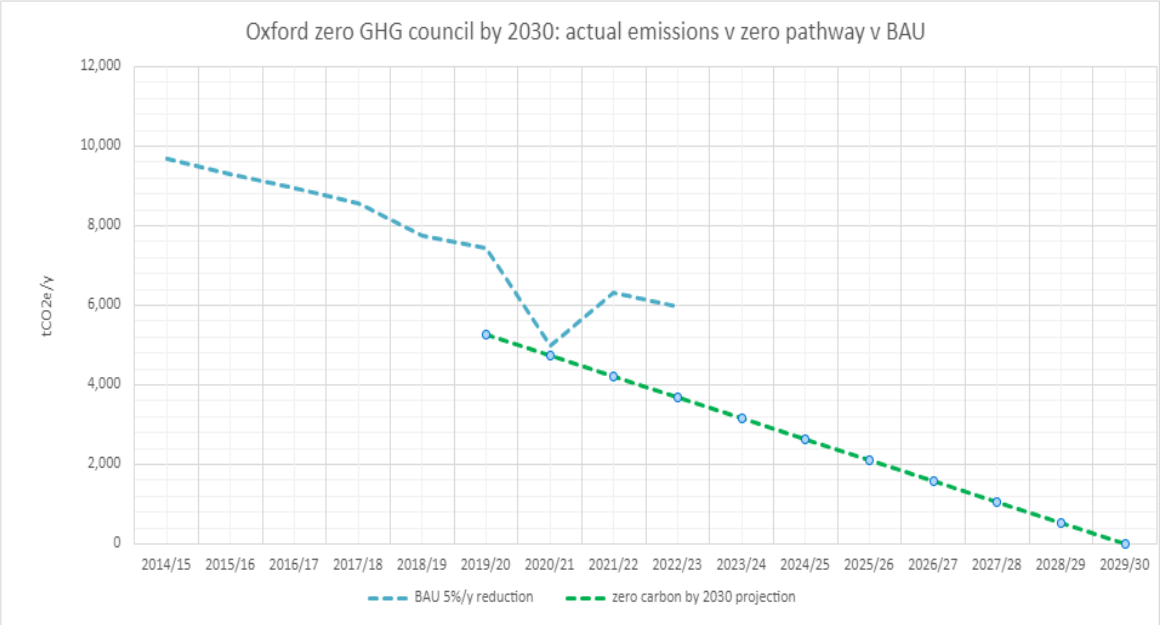

Chart 2: *Net Zero by 2030 progress and required trajectory. The dotted blue line highlights the underlying emissions progress. The dotted green line shows the trajectory required to meet Net Zero.*

10. Renewable energy installations

The council continuously strives to expand on its on-site electricity generation to reduce reliance on grid-sourced power. Our current Solar PV capacity exceeds 1MW, with plans to improve on this in the pipeline.

11. **Purchase of renewable energy**

Up until 2021 the council purchased 100% green electricity across its portfolio from renewable energy guarantee of origin (REGO) sourced supplies. However, the council has since taken the decision to stop these purchases until provenance of these REGO supplies improves demonstrating greater transparency and preferably sourced from local renewable energy sources. The current price for purchasing REGOs and equivalent gas certificates (RGGOs) has increased significantly in recent years and the premiums for these are now being diverted into internal funds to tackle carbon emissions within the direct estate and operations at the council. Standard REGO purchases continue not to be counted in future years reporting until provenance/accessibility of higher quality REGOs can be sourced in line with current guidance[2]. Instead, the Council will continue to invest in the installation of renewable energy solutions across our estate and will investigate the purchase of PPAs.

[2] https://ukgbc.s3.eu-west-2.amazonaws.com/wp-content/uploads/2021/03/08140719/Renewable-Energy-Procurement-Carbon-Offsetting-Guidance-for-Net-Zero-Carbon-Buildings.pdf

The council will conduct an Energy Procurement Review in Summer 2024 with a third-party consultant, this will seek to actively assess other options of procuring electricity through power purchase agreements (PPAs) or related arrangements with local renewable energy generators and investment in local renewable energy generation.

12. Sustainable Buildings

The Council continues to invest in the upgrade of its estate with a programme of refurbishments and new build projects. Where possible, energy efficiency solutions that go beyond minimum building regulation and Planning requirements (and other sustainability measures) are implemented. The Council's own planning requirement for the city for new build developments requires a 40% reduction on regulated energy carbon emissions, compared to a Building Regulations compliant base case. This requirement influences new Council buildings as well as those built by other developers in the city, indeed the council wants its own development to go beyond the 40% target to demonstrate local leadership.

13. External Assurance Statement

Energy and water data is validated and managed via a market leading energy bureau database package (Team Sigma) coupled with in-house expertise in this area. Team members managing the energy and carbon reduction programmes at the Council include an ISO 14064 Lead Auditor trained Professional and a CIBSE affiliated Chartered Engineer.

Governance: Mish Tullar, Head of Corporate Strategy has overall accountability and is responsible for the achievement of the target. Councillor Anna Railton, Cabinet Member for Net Zero and Climate Justice is responsible for this work area. Internal assurance and governance for the Carbon Management Programme and related work area is provided through engagement with the officers and relevant steering groups (e.g. Net Zero Carbon Steering Group).

Appendix 1: Total GHG emissions for the last three reporting years (2019/20, 2020/21 and 2021/22)

Table A: Total GHG emissions for the period 1 April 2019 to 31 March 2020

2019/20	Total Units	tCO2	tCO2e
Scope 1			
Gas consumption (kWh)	17,067,643	3,132	3,138
Gas Oil (litres)	31,196	85	86
Kerosene (litres)	4,000	10	11
LPG (litres)	0	0	0
Diesel (litres) - average biodiesel blend	720,318	1,844	1,869
Petrol (litres) - average biofuel blend	19,032	42	42
	Total Scope 1	***5,113***	**5,146**
Scope 2			
Purchased Electricity (kWh)	7,805,098	1,979	1,995
Scope 3			
Electricity - Transmission and distribution	7,805,098	168	169
Average petrol car (miles) - unknown fuel	66,802	19	19
Passenger travel – train, national rail (km)	74,262	3	3
Passenger travel – average local bus (km)	5,757	1	1
Water supply (m3)	87,415		30
Water treatment (m3)	87,415		62
	Total Scope 3	***191***	**284**
	Totals	**7,282**	**7,425**

Heating degree days *(to base 15.5^{o}C) for the Thames Valley Region for the 2019/20 reporting period were 1990.*

* Defra emissions factors guidance – published June 2019 used https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting

Table B: Total GHG emissions for the period 1 April 2020 to 31 March 2021 (the main COVID-19 impact year so unreflective of business-as-usual consumption/emissions)

2020/21	Total Units	tCO2	tCO2e
Scope 1			
Gas consumption (kWh)	9,559,915	1,754	1,758
Gas Oil (litres)	33,330	91	92
Kerosene (litres)	0	0	0
LPG (litres)	0	0	0
Diesel (litres) - average biodiesel blend	673,729	1,692	1,715
Petrol (litres) – (average biofuel blend)	14,009	30	30
	Total Scope 1	***3,567***	**3,595**
Scope 2			
Purchased Electricity (kWh)	5,190,503	1,199	1,210
Scope 3			
Electricity - Transmission and distribution	5,190,503	103	104
Average petrol car (miles) - unknown fuel	66,802	19	19
Passenger travel – train, national rail (km)	74,262	3	3
Passenger travel – average local bus (km)	5,757	1	1
Water supply(m3)	50,250		17
Water treatment(m3)	50,250		36
	Total Scope 3	***126***	**180**
	Totals	**4,892**	**4,985**

Heating degree days *(to base 15.5^{o}C) for the Thames Valley Region for the 2020/21 reporting period were 2005.*

* Defra emissions factors guidance – published June 2020 used

https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting

Table C: Total GHG emissions for the period 1 April 2021 to 31 March 2022

2021/22	Total Units	tCO2	tCO2e
Scope 1			
Gas consumption (kWh)	15,299,817	2,808	2,802
Gas Oil (litres)	17,407	85	86
Kerosene (litres)	0	0	0
LPG (litres)	0	0	0
Diesel (litres) - average biodiesel blend	710,857	1,759	1,786
Petrol (litres) – (average biofuel blend)	9,394	20	21
	Total Scope 1	***4,673***	**4,695**
Scope 2			
Purchased Electricity (kWh)	6,793,611	1,428	1,442
Scope 3			
Electricity - Transmission and distribution	6,793,611	126	128
Average petrol car (miles) - unknown fuel	32,741	9	9
Passenger travel – train, national rail (km)	4,847	0	0
Passenger travel – average local bus (km)	426	0	0
Water supply(m3)	94,531		14
Water treatment(m3)	94,531		26
	Total Scope 3	***136***	**177**
	Totals	**6,236**	**6,314**

Heating degree days *(to base 15.5^{o}C) for the Thames Valley Region for the 2021/22 reporting period were 1945.*

* Defra emissions factors guidance – published June 2021 used

https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting