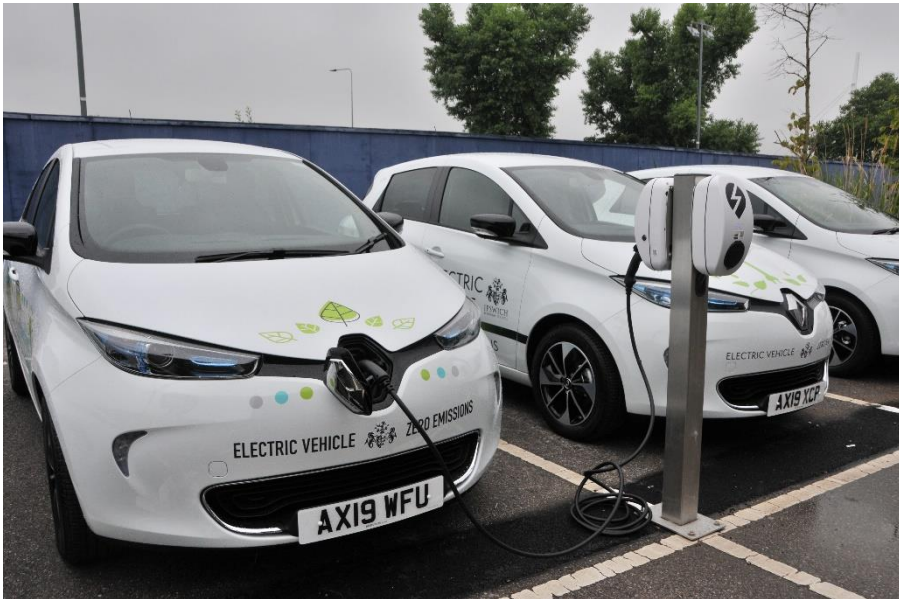




Ipswich Borough Council Greenhouse Gas Report 2020/21



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1. Background to this Report

Local authorities in England have been requested by Government to measure and report annually upon the greenhouse gas (GHG) emissions arising from their own activities.¹ This Annual Greenhouse Gas Report follows HM Government Environmental Reporting Guidelines with emissions broken down into three scopes and reported in Carbon Dioxide Equivalent (CO_{2e}), calculated using the UK Government's 2020 carbon conversion factors.^{2, 3}

Ipswich Borough Council is a second tier Local Authority. Head Office is Grafton House, 15-17 Russell Road, Ipswich, Suffolk IP1 2DE. The report covers the annual period 1st April 2020 to 31st March 2021.

2. Methodology and Scope of Reporting

This 2020/21 Greenhouse Gas Report covers emissions from Ipswich Borough Council's own estate and operations looking at electricity, gas, vehicle fleet fuel use, business travel, and water supply and disposal. Social housing is outside of the scope of the report, and in contrast to 2019/20, energy used in communal areas of sheltered housing and blocks of flats is also excluded. Appendix 1 details the properties included within this report.

Energy, water and fuel consumption data has been provided by Ipswich Borough Council with GHG emissions calculations and analysis carried out by Groundwork

¹ Via a letter to Local Authorities <https://www.gov.uk/guidance/sharing-information-on-greenhouse-gas-emissions-from-local-authority-own-estate-and-operations-previously-ni-185>

² H.M. Government Environmental Reporting Guidelines https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/791529/Env-reporting-guidance_inc_SECR_31March.pdf

³ <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020>

Suffolk. In line with the Environmental Reporting Guidelines carbon emissions are broken down into direct and indirect emissions. These are categorized into Scope 1, Scope 2 and Scope 3 emissions according to which activity and fuel or energy use they arise from.

Scope 1: These are Direct Emissions which arise from the activities of an organization and include fuel combustion on site such as gas boilers and fleet vehicles.

Scope 2: These are Indirect Emissions from electricity purchased and used by the organization. Emissions are created during the production of the energy which is eventually used by the organisation.

Scope 3: These are all other Indirect Emissions from activities of the organisation, occurring from sources that they do not own or control. In this GHG report these cover emissions associated with business travel by employees, hired vehicles, water supply and disposal, and those associated with the 'Transmission and Distribution' (T&D) of electricity purchased by the organisation.

GHG emissions are expressed as tonnes of CO₂ equivalents (tCO₂e). This is a unit of measurement used to indicate the global warming potential of a greenhouse gas, expressed in terms of the global warming potential of one unit of carbon dioxide. The UK Government's 2020 Carbon Conversion Factors have been applied to the units of energy and fuel consumption to calculate the associated emissions.⁴

3. GHG Emissions Statement

Ipswich Borough Council's total gross greenhouse gas emission statement for the year 2020/21 has been calculated to be 3,516 tCO₂e, as shown in Table 1.

⁴<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020>

Table 1. Emissions Statement (Estate and Operations) 2020/21.

2020/21		GHG Emissions (tCO ₂ e)
Scope 1	Natural Gas	1,370
	Council Owned Vehicles (diesel and petrol)	1,124
	Mobile Machinery	66
Scope 2	Electricity	835
Scope 3	Water supply and disposal	33
	Employee Business Travel	4
	T&D Emissions from Electricity	72
	Non-Council owned vehicle use (hired)	13
		3,516

Transmission and Distribution Losses (T&D) refers to the emissions associated with electricity which is lost from the system used for delivering the purchased electricity. These emissions are calculated by using a 'T&D loss' emission factor which is included in the 2020 Carbon Conversion Factors.

Ipswich Borough Council purchases its grid electricity via EDF's 'Zero Carbon for Business' tariff which is a low-carbon nuclear source but does not allow the organisation to report zero emissions for its Scope 2 electricity.

4. Intensity Measurement

In mid-2020 Ipswich Borough Council served a population of 135,979.⁵ An intensity ratio of 'kilogrammes of CO₂e per resident' has been calculated to be 25.86 kgCO₂e/resident for this period.

⁵

<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland>

5. Breakdown of GHG Emissions

Of the total 3,516 tCO₂e for the period 2020/21, 39% has been calculated to be attributable to Scope 1 emissions arising from natural gas used for the heating of Council operated buildings. Grid electricity use accounts for 26% of emissions (and includes the Scope 2 electricity use in buildings, as well as the electric vehicle charging points at Grafton House and Gipping House and the associated Scope 3 T&D emissions).

Fleet mileage (including short term hire vehicles) accounts for 32% of total GHG emissions, mobile machinery for 2% and employee business travel (based on mileage claims for car travel) <1%.

Emissions arising from water supply and sewerage account for the remaining 1% of total emissions.

A breakdown of emissions is provided in Figure 1 below.

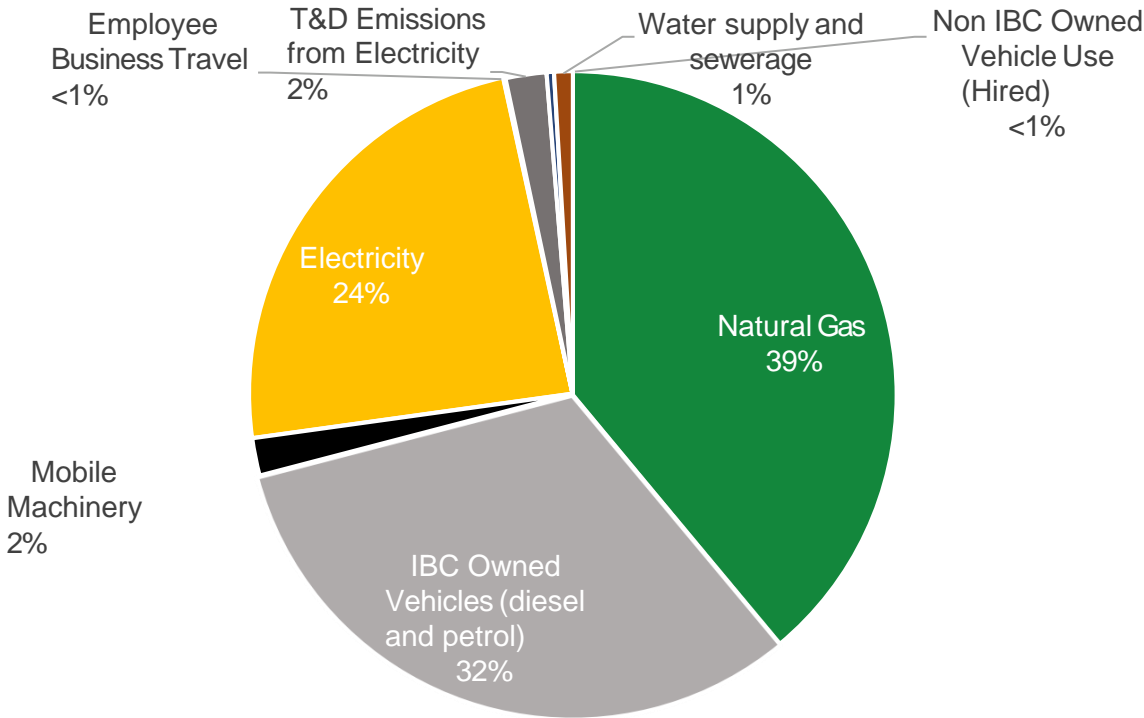


Figure 1. Breakdown of GHG Emissions.

Table 2 below details the breakdown of emissions at each building included within this report. Energy emissions (65%) include gas, electricity and the associated T&D emissions. Transport emissions (36%) include those arising from Council owned vehicles, hired vehicles, mobile machinery, and employee business travel. Transport emissions have been apportioned to a building according to department location, for example, the refuse fleet are based at Gipping House so emissions arising from refuse vehicles have been apportioned to Gipping House. Water emissions (<1%) include emissions arising from water supply and sewerage.

Table 2. Breakdown of emissions by building.

Building	Energy Emissions	Transport Emissions	Water Emissions	Total Emissions
Crown Pools	677.4		9.1	686.4
Grafton House	493.4	168.9	0.9	663.2
Cemetery and Crematorium	356.4		3.4	359.8
Ipswich Museum	107.3		0.2	107.4
Christchurch Mansion	100.6		0.5	101.1
Gipping House	98.6	921.4	0.9	1020.8
Regent Theatre	86.3		1.2	87.4
Fore Street Pool	84.8		2.0	86.8
Gainsborough SC	81.8		2.5	84.3
Whitton SC	47.1		1.4	48.5
Town Hall*	47.2		2.6	49.9
Chantry Park Stables	26.1		1.1	27.2
Holywells Park - stable block	23.5	116.4	0.3	140.2
Corn Exchange**	15.7			15.7
Ipswich Art Gallery	12.3		0.0	12.4
Ransomes	8.5		2.1	10.5
Athena Hall Gym***	5.2			5.2
Toilet blocks	5.1		4.4	9.5
Reg Driver Centre****			0.4	0.4
Total	2,277.3	1,206.6	32.7	3,516.4

* Energy emissions include gas only. Electricity supply is included in consumption figure for Corn Exchange.

** Energy data includes electricity supply to Town Hall. Water data is included in consumption figures for Town Hall.

*** No water data is available for the year 2020/21 as it was closed and Ipswich Borough Council no longer operate it.

**** Energy data is included in consumption figures for Christchurch Mansion.

6. Electricity Generated from On-site Solar PV

In 2020/21 Ipswich Borough Council had solar photovoltaic (PV) systems installed at four sites. Generation meter readings were not available and has therefore been estimated from the kWp size and orientation of each system.

These generated an estimated total of 104,826 kWh over this annual period, Table 3.

Table 3. Solar PV Installations and Electricity Generation.

Site	Estimated solar generation 2020/21 (kWh)
Gainsborough Sports Centre	40,000
Whitton Sports Centre	37,000
Crown Pools	17,200
Fore St Baths	10,626
Total	104,826

This renewable energy generation avoids associated emissions of grid electricity of approximately 30.2tCO₂e/year.

It has not been possible to ascertain how much of the electricity generated at these sites is used on site as no data from export meters was available. It is recommended that generation and export data is recorded where possible and included in future GHG reporting.

7. Energy use in Buildings

Electricity and gas consumption data was provided from meter readings at all Ipswich Borough Council's buildings and other sites it occupies.

As shown above in Figure 1, electricity and gas consumption together account for 63% of total emissions. Further analysis has shown that the 10 buildings with the highest annual energy use account for 59% of total GHG emissions, the breakdown of which is shown in Figure 2.

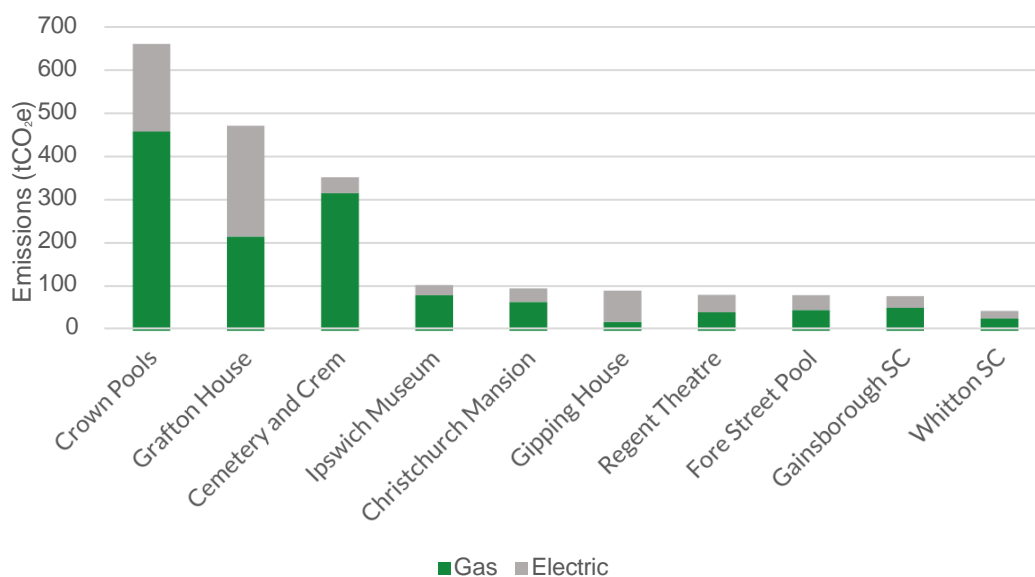


Figure 2. Top 10 buildings with the highest annual GHG emissions in 2020/21.

The top three buildings in 2019/20 (Crown Pools, Grafton House, and the Cemetery and Crematorium) have remained the same in 2020/21. Figure 3 below shows a comparison between the emissions of the top 10 buildings in 2020/21 with their emissions in 2019/20.

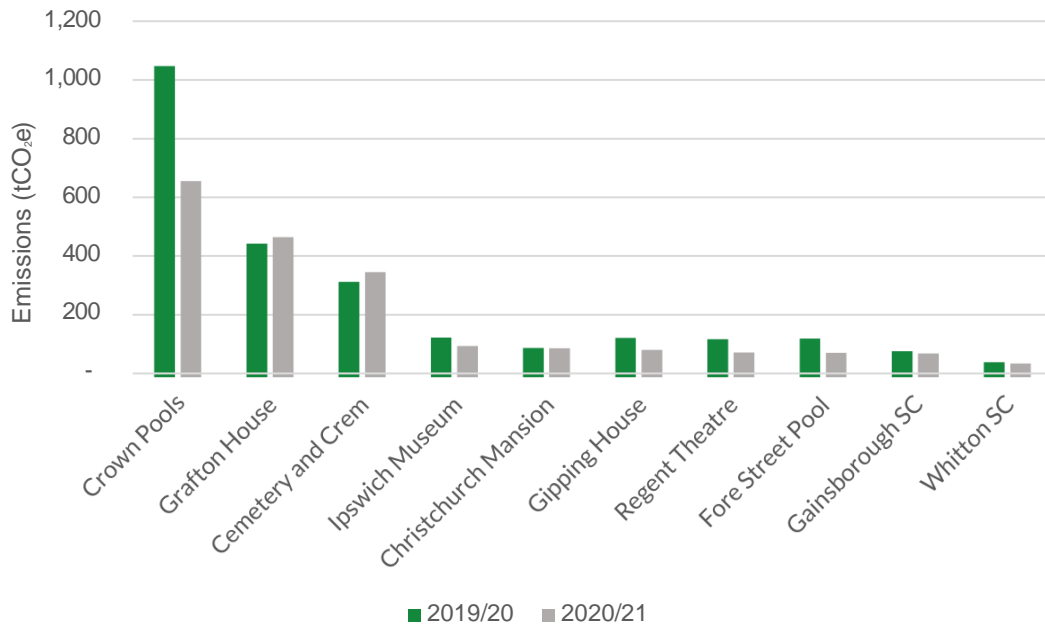


Figure 3. Top 10 buildings with the highest annual GHG emissions in 2020/21 compared with their emissions from 2019/20.

Emissions in 2020/21 have fallen significantly for Crown Pools (-37%), Fore Street Pools (-37%), Regent Theatre (-35%), Gipping House (-30%), Ipswich Museum (-21%), Gainsborough Sports Centre (-9%), and Whitton Sports Centre (-9%).

Unprecedented lockdowns caused by the Covid-19 pandemic forced non-essential services and public venues to shut down for the majority of 2020/21. The impact of this can, in part, explain some of the significant emissions reductions experienced by the sports and leisure centres, museum, and theatre.

In addition to building closures, some energy efficiency projects have also taken place, including lighting upgrade in the basement and changing rooms of Crown Pools. It is unknown how much of the 37% decrease in emissions can be attributed to this upgrade.

However, emissions have risen for the Cemetery and Crematorium (+10%) and Grafton House (+5%) which may also be attributed to the Covid-19 pandemic. At the same time as building closures and reduced occupancies, some buildings were required to remain open and operational, such as key offices and industries, whilst adapting to

requirements of Covid-19 such as increased ventilation. In this instance an increase in energy for heating can be seen where having windows or increasing ventilation during the winter will have a negative impact on heating energy consumption.

The decarbonisation of the UK electricity grid has continued to have a positive effect in reducing the carbon intensity of electricity and therefore the resultant Scope 2 emissions. The UK grid factor continued to reduce decreasing a further 9% from the 2019/20 reporting year.

8. Transport Related Emissions

Transport related emissions (fleet mileage, mobile machinery and employee business mileage) account for 36% of Ipswich Borough Council's total annual GHG emissions.

As shown in Figure 4, the majority (32%) of transport-related emissions for 2020/21 can be attributed to fleet vehicles. These include refuse collection vehicles, vans, passenger vehicles and road-going tractors/agricultural vehicles (including both leased vehicles and those on short-term hire).

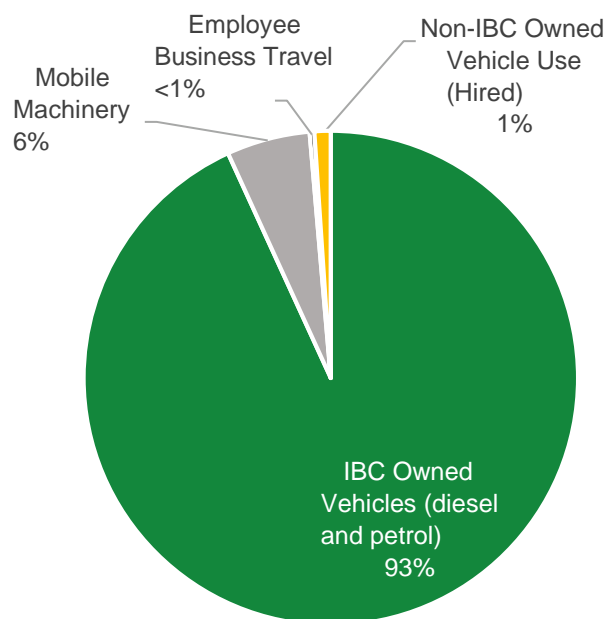


Figure 4. Breakdown of Fleet and Business Mileage Emissions.

Emissions from fleet vehicles have increased by 69% since 2019/20, Figure 5. It's likely that this is due to improved data reporting. In 2019/20 fleet emissions were estimated according to annual mileage figures. For 2020/21, actual fuel consumption in litres was available for all vehicles.

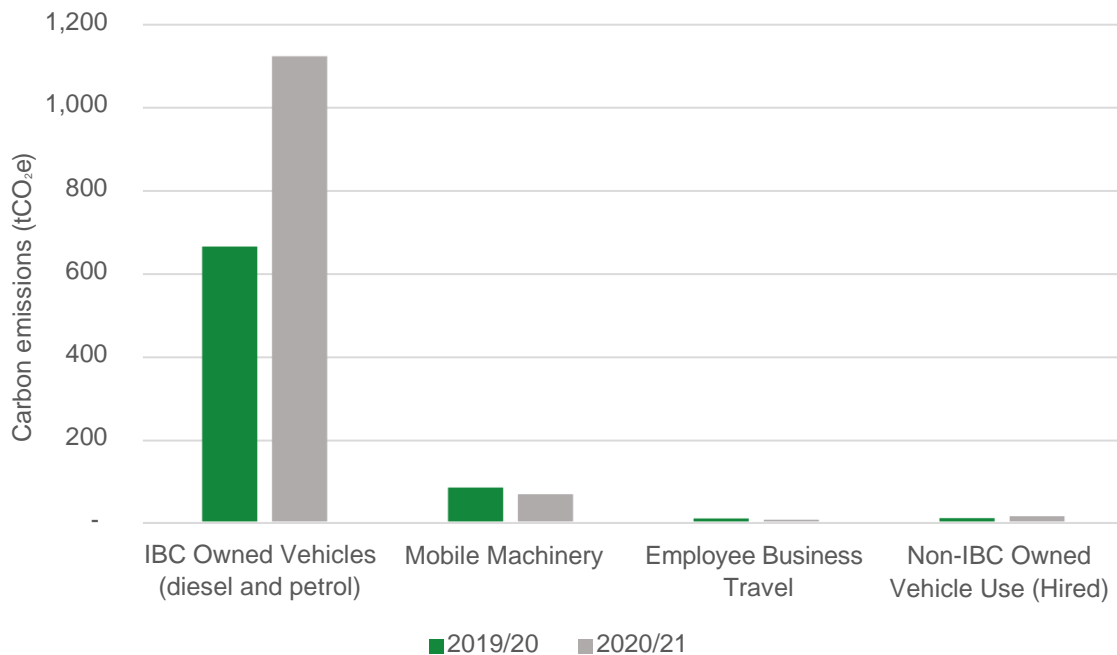


Figure 5. Comparison of transport related emissions in 2019/20 and 2020/21.

Emissions arising from employee business mileage have decreased by 53% since 2019/20 and this can also be attributed to the Covid-19 pandemic where home-working was in place for much of the year with most face-to-face meetings cancelled and moved online.

From the data available it is not possible to determine what type of vehicle employee mileage claims are made in and for this reason an average conversion factor (unknown average car miles) has been applied to calculate emissions.

9. Water Emissions

Emissions associated with water consumption and the discharge and treatment of wastewater are included in this carbon footprint. Although this represents 1% of the total carbon footprint, water use and disposal does have other environmental impacts which are not captured in carbon reporting, such as the depletion of water sources and the potential degradation of natural habitats.

As shown in Figure 6 below, Crown Pools has the highest water footprint which is to be expected given it is the largest leisure facility in Ipswich. The remaining top 10 buildings are also in line with what would be expected given the nature of the services they provide.

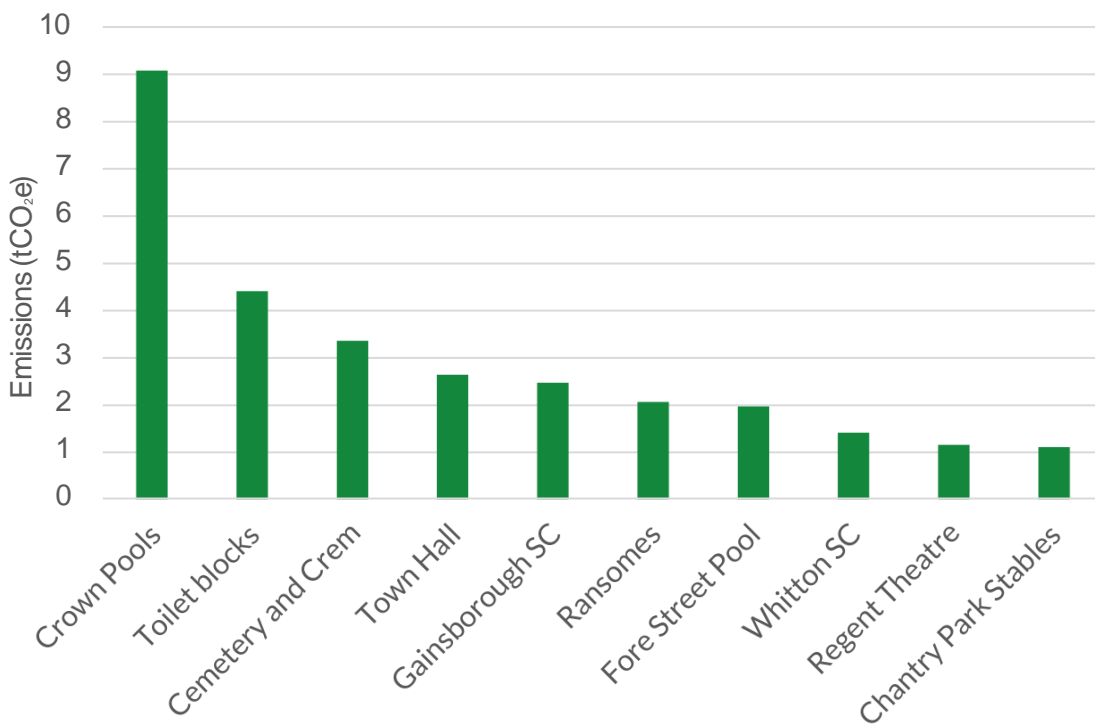


Figure 6. Top 10 buildings with the highest emissions arising from water supply and sewerage.

Emissions arising from water consumption have been based on estimated readings,

and as with energy use, it is anticipated that consumption is lower than in previous years due to the Covid-19 pandemic. Comparisons to previous years' is not possible due to unavailability of data. No data has been provided for Waterfront Gym as it has not re-opened following the Covid-19 pandemic.

Accuracy of reporting will be improved if accurate water consumption is recorded at all sites.

10. Achievements Over Time

Ipswich Borough Council has had a carbon reduction target since 2008 and reports on its GHG emissions annually. Although in making comparisons it should be noted that the Council's estate and activities may have changed over time, emissions have declined by 51% since 2014/15 which has previously been set as the baseline year.

As shown in Figure 7, emissions arising from the use of electricity have declined by 73%, gas emissions by 46% and transport related emissions by 4% since 2014/15. 2020/21 is the first year that water emissions have been included.

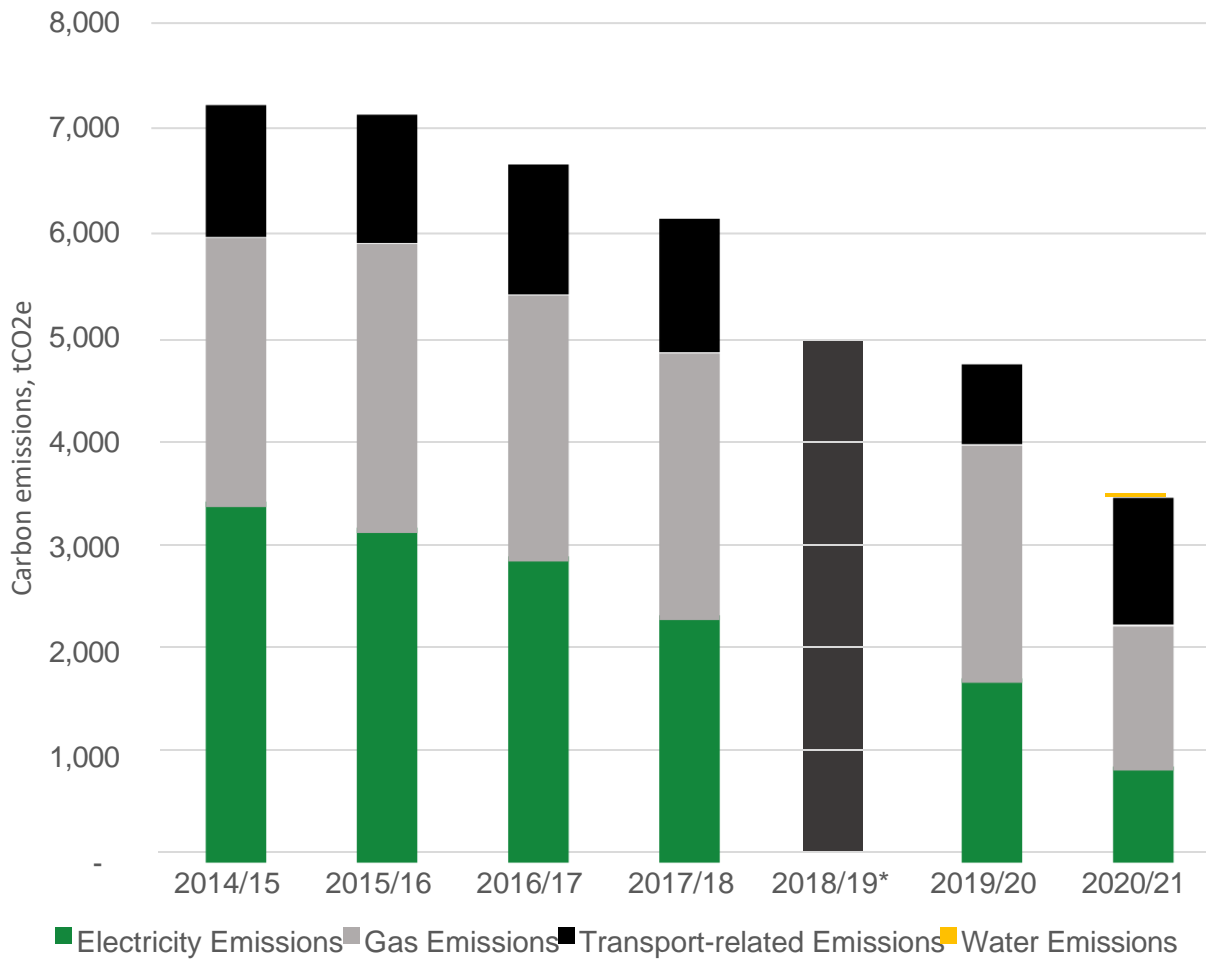


Figure 7. Annual Greenhouse Gas Emissions Over Time.

*Data for 2018/19 is unavailable.

It should be noted that the decarbonisation of the UK’s electricity grid (because of the increase in the supply of renewable electricity) has meant that associated carbon emissions have decreased and Carbon Conversion Factors per kWh have come down by 49% over this period, accounting for much of this emission reduction.

Furthermore, the Covid-19 pandemic has caused significant disruption to ‘business as usual’ throughout the timeframe covered in this report, as discussed in previous sections. As a result, the emissions reduction reported in 2020/21 may not necessarily reflect long-term change and it is likely that emissions may increase in 2021/22 as activities return to normal.

11. GHG Reporting in Future Years

Ensuring that GHG Reports covering Ipswich Borough Council's operational energy use are produced on an annual basis will enable accurate year on year comparisons to be made and emissions reductions to be tracked over time. Newly acquired and operated buildings should also be included.

In future years, as data becomes available, the scope of this reporting could be expanded to cover other emissions sources across Ipswich Borough Council's estate and operations that the Council has direct influence over. This could include, for example, operational waste, fugitive GHG emissions from air-conditioning units, staff commuting, domestic energy used by staff working at home, and procurement.

Sub-metering and reporting of electric vehicle charging would also enable greater depth of analysis and reporting, as would the measurement of solar PV electricity generation and export from each site.

Appendix 1: Ipswich Borough Council Sites Included in this Report

1. Grafton House
2. Ipswich Museum
3. Christchurch Mansion
4. Ipswich Art Gallery
5. Crown Pools
6. Fore Street Pool
7. Gainsborough SC
8. Northgate SC – operated by Suffolk County Council
9. Ransomes
10. Waterfront Gym
11. Whitton SC
12. Regent Theatre
13. Corn Exchange
14. Town Hall
15. Cemetery and crematorium
16. Gipping House
17. Toilet Blocks—Sports Facilities
18. Toilet blocks—Parks
19. Toilet Blocks—Cemeteries
20. Chantry Park Stables
21. Reg Driver Centre
22. Holywells Park – Stable block