Tunbridge Wells Borough Council

Borough Emissions Report 2005 - 2023

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1. Tunbridge Wells Borough Profile

Tunbridge Wells Borough is located in the county of Kent, in southeastern England, bordering East Sussex. Covering approximately 126 square miles (326 square kilometres), the borough is characterized by rolling countryside, the High Weald Area of Outstanding Natural Beauty, and a mix of woodland, farmland, and historic settlements. Its topography features gentle hills and valleys, with the sandstone geology contributing to notable landmarks such as Tunbridge Wells' famous Chalybeate Spring and the scenic rocks at High Rocks.

The population size in Tunbridge Wells increased by 0.2% between 2011 to 2021, reaching 115,300 residents as of the 2021 census. Out of the 12 districts in Kent, Tunbridge Wells ranks 10th for population size just above Folkestone & Hythe and Gravesham. Figure 1 shows a complete overview of the borough and its wards.

Figure 1: Map of Tunbridge Wells Borough

The Department for Energy Security & Net Zero (DESNZ) released annual statistics on Carbon Dioxide Equivalent emissions (CO_2e)[1] in June 2025. The most recent data available for the Borough is 2023 due to this data always being two years in arrears. These emissions are allocated on an end-user basis, meaning they are attributed to the locations where energy is consumed.

[1] Carbon Dioxide Equivalent (CO_2e) = Carbon Dioxide, Methane and Nitrous Oxide represented as one equivalent unit, to measure the climate change impact of multiple gasses under one metric.
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Whilst emissions from Tunbridge Wells Borough Council are included within this overall figure, this data includes emissions from all activities within the borough boundary. Borough CO_2e emissions are split into eight sectors:

- Industry
- Commercial
- Public sector
- Domestic
- Transport
- Land use change and forestry (LULUCF)
- Agriculture
- Waste

In 2023 the Borough of Tunbridge Wells emitted 422.8 kilotonnes[2] of Carbon Dioxide Equivalent ($ktCO_2e$).

2. Emissions Overview ($ktCO_2e$)

Emissions Sector	2015	2016	2017	2018	2019	2020	2021	2022	2023
Industry	36.8	34.0	34.7	29.5	27.6	25.0	26.5	24.6	23.9
Commercial	81.5	66.5	53.3	62.1	58.0	51.1	56.5	53.8	46.1
Public Sector	30.5	24.5	24.7	21.9	20.4	19.8	21.7	19.3	17.7
Domestic	224.7	211.9	197.2	195.8	188.0	186.9	189.1	162.1	152.2
Transport	171.9	178.9	175.9	174.7	170.5	142.2	151.6	154.2	149.1
LULUCF	-54.3	-52.4	-53.9	-53.4	-54.0	-54.8	-53.5	-52.4	-52.3
Agriculture	65.2	62.4	64.9	59.8	55.6	53.7	59.1	54.2	50.7
Waste	44.0	35.3	41.5	35.2	32.5	30.6	30.0	32.9	35.3
Total Borough Emissions	**600.2**	**561.3**	**538.3**	**525.7**	**498.6**	**454.6**	**481.0**	**448.6**	**422.8**

[2] Kilotonne = one thousand tonnes
2023 UK greenhouse gas emissions, provisional figures

3. Emissions Breakdown ($ktCO_2e$)

Industry	Kilotonnes Carbon Dioxide Equivalent ($ktCO_2e$)
Electricity	5.8
Gas	0.6
Large Industrial Installations	0.0
Other	17.5

Commercial	Kilotonnes Carbon Dioxide Equivalent ($ktCO_2e$)
Electricity	29.5
Gas	12.6
Other	4.0

Public Sector	Kilotonnes Carbon Dioxide Equivalent ($ktCO_2e$)
Electricity	6.4
Gas	9.6
Other	1.7

Domestic	Kilotonnes Carbon Dioxide Equivalent ($ktCO_2e$)
Electricity	36.9
Gas	92.5
Other	22.9

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Transport	Kilotonnes Carbon Dioxide Equivalent ($ktCO_2e$)
Road Transport (A Roads)	86.8
Road Transport (Motorways)	0.0
Road Transport (Minor Roads)	59.6
Diesel Railways	0.7
Other	2.0

Land Use Land Use Change and Forestry	Kilotonnes Carbon Dioxide Equivalent ($ktCO_2e$)
Net Emissions: Forestry	-48.8
Net Emissions : Cropland mineral soils under LUC	4.6
Net Emissions: Grassland mineral soils under LUC	-11.6
Net Emissions: Settlements	2.9
Net Emissions: Peatland	0.0
Net Emissions: Bioenergy crops	0.0
Net Emissions: Other LULUCF	0.7

Agriculture	Kilotonnes Carbon Dioxide Equivalent ($ktCO_2e$)
Electricity	3.2
Gas	0.2
Other	9.5
Livestock	21.9
Soils	15.9

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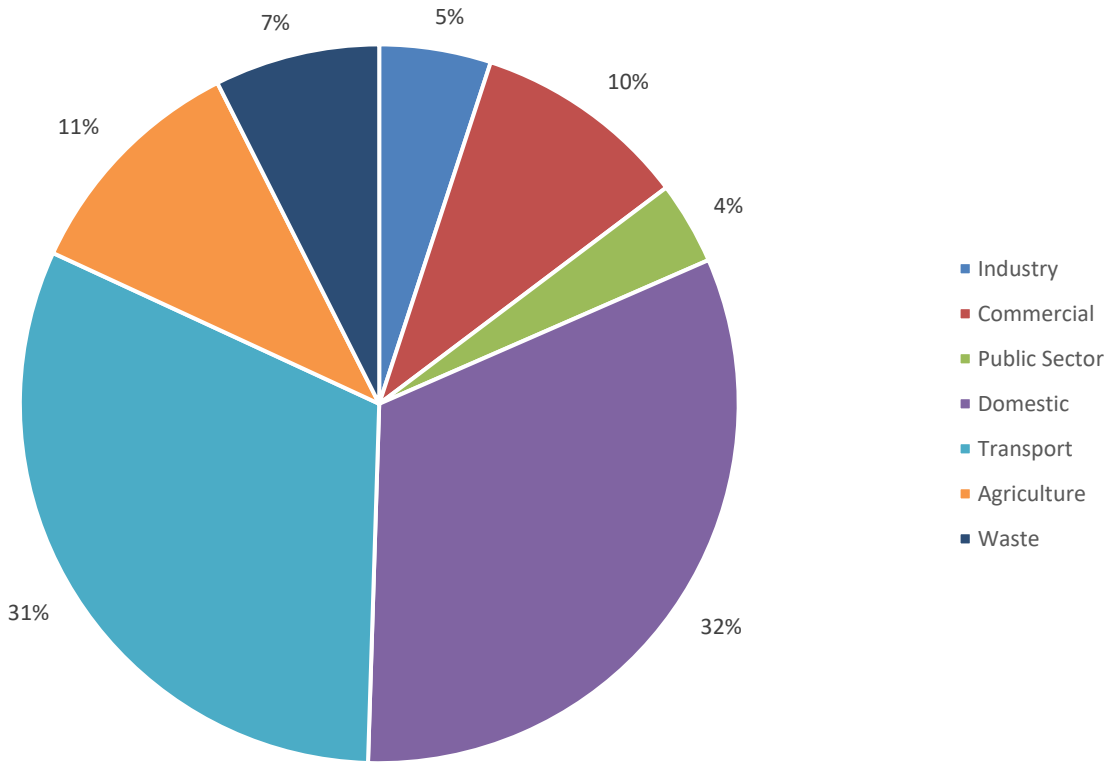
Waste	Kilotonnes Carbon Dioxide Equivalent ($ktCO_2e$)
Landfill	30.3
Other	5.0

Tunbridge Wells Borough	Kilotonnes Carbon Dioxide Equivalent ($ktCO_2e$)
Total	**422.8**

Population ('000s, mid-year estimate)	**117.0**
Per capita emissions (tCO_2e)	**3.6**
Area (km^2)	**331.3**
Emissions per km^2 ($ktCO_2e$)	**1.3**

Figure 2. Borough emissions sector breakdown 2023



2023 UK greenhouse gas emissions, provisional figures

4. Emissions Comparison

The emissions data for Tunbridge Wells Borough, as highlighted in the 2023 DESNZ report, reflects the borough's distinctive economic and geographical profile. Contributing 5.8% to the total county emissions, Tunbridge Wells ranks as the second-lowest emitter in Kent, just behind Gravesham, with 397.5 $ktCO_2e$ (figure 3). This lower contribution can be attributed to several factors. The borough's economy is less reliant on industry, as evidenced by its modest 2.9% influence on Kent's industrial emissions.

In comparison to other Kent districts, Tunbridge Wells Borough has higher emissions in the commercial, domestic , and public sector at 9.8%, 9.6%, and 16.2%, respectively. This suggests a greater emphasis on service-based industries, public services, and residential activities, likely due to its status as a predominantly residential and commuter area. The borough's transport emissions are moderate at 6.7% of county totals, reflecting its role as a suburban region with substantial commuting patterns.

Tunbridge Wells reduces emissions through Land Use, Land-Use Change, and Forestry (LULUCF) by capturing and storing carbon in its natural landscapes. This sector is a net sequester of emissions (-52.3 $ktCO_2e$). This is links to the borough's semi-rural nature and the presence of significant forest and grassland.

Finally, agricultural activities contribute 6.6% and waste activities contribute 8.1% to Kent's emissions.

5. Population and Area Impacts

Tunbridge Wells borough, with a total population of 115,300 as of the 2021 census, accounts for just 7.3% of the total population of Kent, making it the third smallest district in the county. This percentage is only slightly larger than Folkestone & Hythe and Gravesham, although in 2023 Tunbridge Wells reported a lower total $ktCO_2e$ compared to Folkestone & Hythe.

Notably, the borough sequesters the fourth most CO_2e emissions across the county, 52.3 $ktCO_2e$ in total. Tunbridge Wells is known for its wooded landscape, with over 70% of the borough covered by the High Weald, including significant forest land which supports natural carbon sequestration.

The borough has the second-lowest emissions ($ktCO_2e$) per km^2, meaning carbon dioxide levels are less concentrated across its area. This is especially positive given that the borough is also the sixth largest by land area in the county. While Tunbridge Wells does have urban areas, a significant portion of the borough is rural. For example, The High Weald Area of Outstanding Natural Beauty (AONB) covers around 70% of the Borough.

The borough ranks as the fourth-lowest contributor to industrial emissions, provided it has a smaller industrial base, especially in comparison to Tonbridge & Malling and Swale, which have higher levels of industrial activity and commercial infrastructure. This is a position consistent with its ranking for agricultural emissions and LULUCF net emissions. Transport and waste

2023 UK greenhouse gas emissions, provisional figures

represent the next largest sources, placing the borough 6th and 7th, respectively, among county districts. Tunbridge Wells is a commuter town and therefore, provides good connectivity, especially to London via trains, providing good access to sustainable commuting options. The highest-emitting sectors are commercial, domestic, and public services, corresponding to 10th, 11th, and 12th place rankings, respectively.

Figure 3. Emissions comparison across all Kent districts in 2023 ($ktCO_2e$)

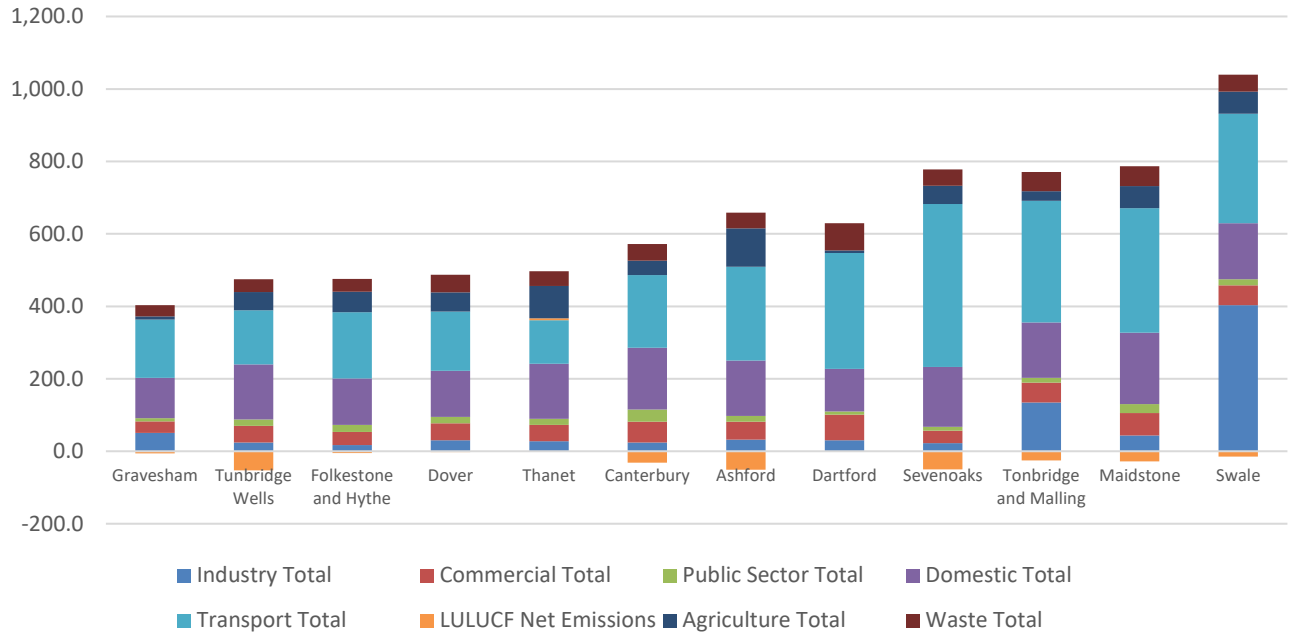


Figure 4. Emissions comparison across county's in 2023 ($ktCO_2e$)

The chart illustrates total emissions (in tonnes of CO_2e) across all boroughs in Kent. Tunbridge Wells shows notably lower emissions compared to most, emitting 422.8 $ktCO_2e$, as represented by the red bar. These gross emissions are significantly lower than Swale, the highest emitter at just over 1,024.9 $ktCO_2e$.

2023 UK greenhouse gas emissions, provisional figures

One possible explanation for the borough's lower emissions is its relatively small population growth of just 0.2% between 2011 and 2021. Compared to nearby districts like Maidstone and Ashford, which saw population increases of 13.3% and 12.5%, respectively, Tunbridge Wells has grown at a much slower pace. This slower growth results in reduce stress and demand for services, compared to neighbouring borough with a greater growth rate. This reduced demand on services results in lower emissions associated with energy use and transport.

6. Borough Emissions: 2005 - 2023

6.1. Industry

In Tunbridge Wells, the industrial sector includes local manufacturing, construction, and small-scale production activities. Emissions primarily come from energy use in these processes, such as heating, machinery operation, and transportation of goods.

Industry CO_2e emissions have seen a decline of 27.3 kt CO_2 from 2005 to 2023. This equates to a 53.3% decrease in CO_2e emissions. Figure 6 (page 14) highlights the change in industry emissions since 2005, with emissions peaking in 2005 followed by a steady decline to 2023 levels. This reduction is attributed to a reduction in emissions from industry electricity usage. The decarbonisation of the national grid has been the main driving force behind the electricity usage and consequential emissions drop. As further explained in the DESNZ breakdown of emissions, the reduction in industrial installations also caused this change. Emissions are currently at their lowest despite a slight rebound following the COVID-19 pandemic as following the lockdowns, industry and business rebounded.

6.2. Commercial

The commercial sector in Tunbridge Wells includes retail shops, offices, hotels, and restaurants. Energy use for heating, lighting, refrigeration, and air conditioning are the major sources of emissions. Reducing emissions in this sector includes making local businesses more energy-efficient, which can reduce operational costs, enhance competitiveness, and align with the borough's net zero ambitions.

Commercial CO_2e emissions have decreased by 81.2 ktCO_2 from 2005 to 2023. This is a 63.8% decrease in emissions. Figure 7 (page 14) highlights the change in commercial emissions since 2005, with emissions peaking in 2006, followed by fluctuations until 2012, and then observed a sharp decline to 2017 levels. Levels since then have plateaued slightly but have reached an all-time low in 2023. This long-term fall is mostly caused by the reduction in emissions resulting from electricity use in this sector, as the national grid decarbonises.

2023 UK greenhouse gas emissions, provisional figures

6.3. Public Sector

The public sector includes the NHS, Tunbridge Wells Borough Council, emergency services, schools, libraries, and other public buildings. Emissions come from heating and electricity use. Reducing emissions within the public sector is important as it sets a standard for the community, demonstrating leadership in sustainability and helping meet local net zero ambitions.

Public sector CO_2e emissions reduced by 30.1 ktCO_2e from 2005 to 2023. This is an 63.0% reduction. Figure 8 (page 14) highlights the change in public sector emissions since 2005, with emissions witnessing a gradual decline until 2013, followed by the steepest drop of 19.5% in 2016. This decline continued until 2019, when emissions plateaued off until an all-time low in 2023. This change is driven largely by the similar drops in public sector gas consumption and electricity usage. Nation grid decarbonisation has also led to a reduction in associated electricity emissions.

6.4. Domestic

Emissions from the domestic sector in Tunbridge Wells arise from energy use in homes, particularly through heating, lighting, hot water, and electrical appliances. Many homes in the borough are older, with less energy-efficient insulation and heating systems. Improving energy efficiency in households can help residents lower energy bills, create warmer homes and reduce emissions.

Domestic CO_2e emissions have seen a 49.6% reduction since 2005. Figure 9 (page 14) displays a steady decreasing trend between 2005 to 2008, followed by fluctuations until 2013. The largest drop in emissions of 15.1% was in 2014, with a gradual decline until 2023. Hitting an all-time low in 2023 with CO_2e emissions of 152.24 kt CO_2e. The biggest change being seen in the domestic electricity emissions reducing by 71.6% since 2005. DESNEZ explains how the drop between 2021 to 2022 is largely attributed to warmer temperatures reducing heating requirements and higher energy prices forcing residents to limit their energy use.

6.5. Transport

Transport in Tunbridge Wells covers road traffic, public transportation, and private vehicles. Emissions come from the combustion of petrol and diesel in cars, buses, and delivery vehicles. With increasing traffic congestion and reliance on cars, reducing transport emissions presents a significant challenge, as we strive for improved air quality, alongside healthier and low-carbon travel options like cycling, walking, public transport and electric vehicles.

Transport CO_2e emissions have stayed relatively consistent from 2005 to 2019, followed by a 16.6% drop in 2020. COVID-19 largely caused this decline, with lockdowns and restrictions on travel. This rebounded back by 6.7% in 2021, increased slightly in 2022, then dropped again in 2023. A 21.7% reduction in emissions has been observed since 2005, with a 2023 year-end

[2023 UK greenhouse gas emissions, provisional figures]

total of 149.14 kt CO_2e. This is up 4.9% from all-time low transport emissions in 2020. Figure 10 (page 15) reflects the changes between 2005 to 2023, where lower fuel consumption and improved fuel efficiency have played a part in the emissions trends displayed.

6.6. Land Use, Land Use Change and Forestry (LULUCF)

In Tunbridge Wells, this sector includes emissions and carbon sequestration associated with local green spaces, parks, woodlands, and agricultural land. Activities like urban development, tree planting, and land management practices can either increase or reduce emissions. By carefully managing land use, we can enhance carbon sequestration, preserve biodiversity, and contribute to climate resilience.

The LULUCF sector consists of emissions and removals from forests, cropland, grassland, and settlements. It is the only sector that includes emission removals, with this sector being a net negative greenhouse gas emitter since records began. Net LULUCF emissions have remained consistent since 2005, showing a slight increase in CO_2e sequestration over the past 18 years. 6.5% increase in CO_2e sequestration since 2005, with a year-end total of -52.3 kt CO_2e. This is down 4.6% from an all-time high sequestration in 2020. Figure 11 (page 15) shows the changes between 2005 to 2023.

6.7. Agriculture

Emissions in this sector arise from activities such as livestock farming, fertilizer use, and land management. Supporting sustainable agricultural practices and encouraging local food production can help reduce emissions, enhance food security, and promote the local economy.

Agriculture CO_2e emissions have remained relatively constant between 2005 to 2017, followed by a 17.2% decrease until 2020. A slight rebound in levels was seen in 2021 due to the effects of the COVID-19 pandemic. CO_2e emissions have since dropped once again. Figure 12 (page 15) highlights the 32.5% reduction in emissions since 2005, with a 2023 year-end total of 50.7 kt CO_2e. This is the lowest agricultural emissions have been since 2005. The main reduction has resulted from the decarbonisation of the national grid.

6.8. Waste

Waste emissions in Tunbridge Wells come from the decomposition of organic waste in landfill sites, recycling processes, and waste transportation. Domestic waste in the borough is not sent to landfill, however DESNZ allocates their emissions data back to the producer of the waste e.g., households and industry. The council's waste management strategies, including recycling programs and composting initiatives, play a crucial role in reducing emissions. TWBC is responsible for providing domestic waste collection to households. All waste collected from residential addresses is then delivered to the North Farm Household Waste Recycling Centre

2023 UK greenhouse gas emissions, provisional figures

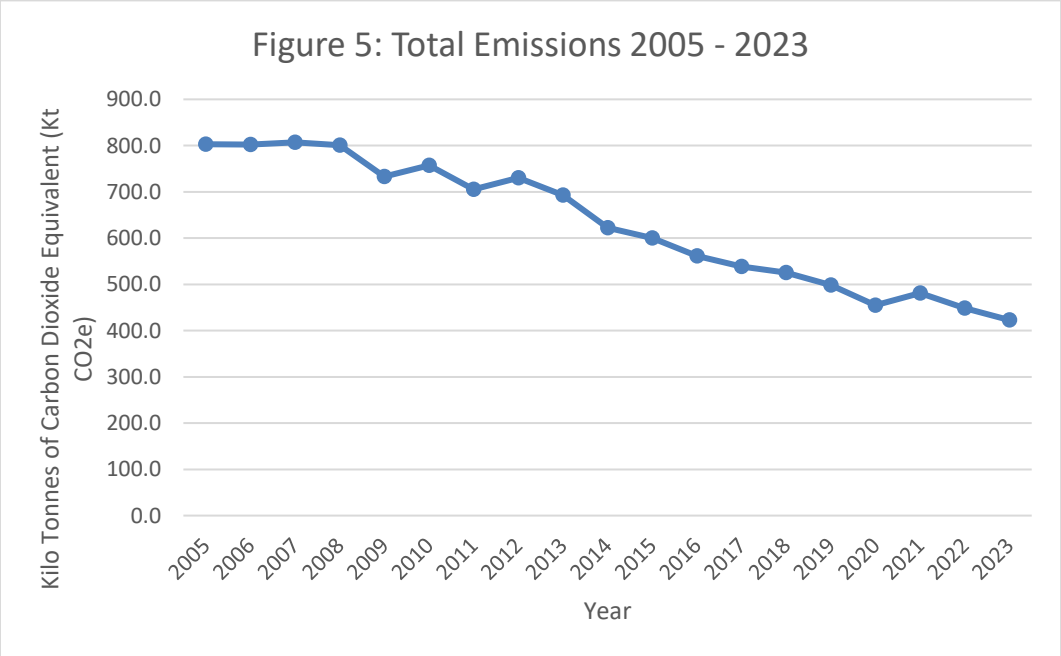
(HWRC). Kent County Council (KCC) manages the disposal of waste, without sending any directly to landfill. Waste streams collected at North Farm HWRC are then sent to various processing plants for further treatment. By minimising waste and promoting recycling, methane emissions and the environmental impact of waste disposal can be reduced.

Waste CO_2e emissions have experienced a 39.3% reduction since 2005 shown in figure 13 (page 15). Emissions saw an extreme 48.4% jump between 2006 to 2007, with an all-time high of 86.0 kt CO_2e in 2008. A gradual decline occurred until 2016, when levels rebounded slightly. Emissions have declined slightly but are now showing an upward trend into 2023. The 2023 year-end total of 35.3 kt CO2e is up 17.8% from the all-time low waste emissions in 2021.

6.9. Total

Tunbridge Wells Borough emissions have observed a 47.3% decrease from 2005 to 2023. Total CO_2e emissions in Tunbridge Wells saw fluctuations and a small decline between 2005 to 2011. The biggest declining trend is seen between 2012-2020, with the biggest drop of 8.8% from 2019 to 2020. A 5.8% increase then followed from 2020 to 2021, because of the UK getting closer to normal following two years of COVID-19 lockdowns and restrictions. Figure 5 (page 13) highlights the change between 2005 to 2023, with a year-end of 422.8 kt CO_2e in 2023. This is the lowest total emissions have been since 2005.

Largely the general declining trend is driven by the decarbonisation of the national grid. Some further reductions are attributed to improved transport and building energy efficiencies.



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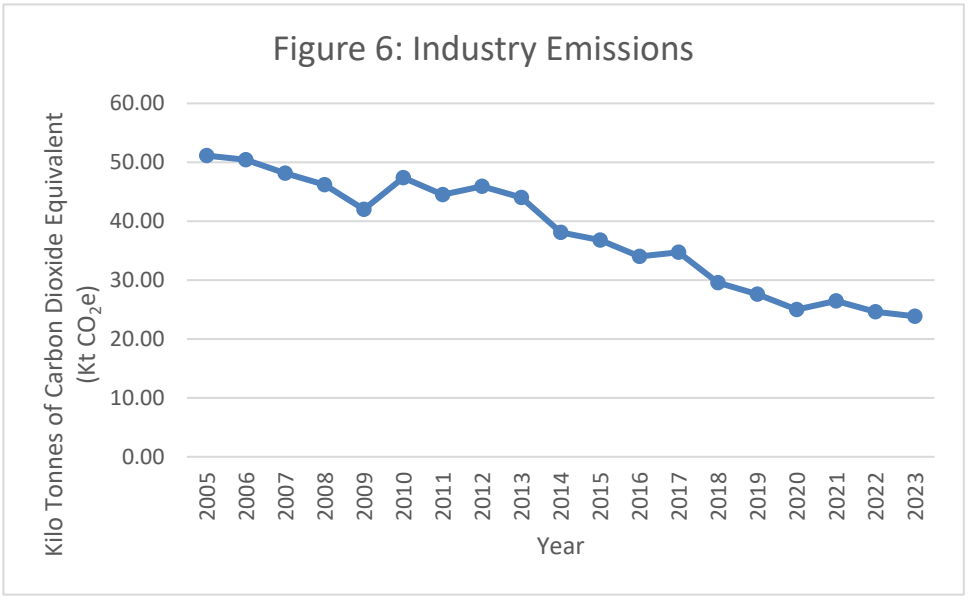
Figure 6: Industry Emissions
Kilo Tonnes of Carbon Dioxide Equivalent (Kt CO_2e)
60.00
50.00
40.00
30.00
20.00
10.00
0.00
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Year

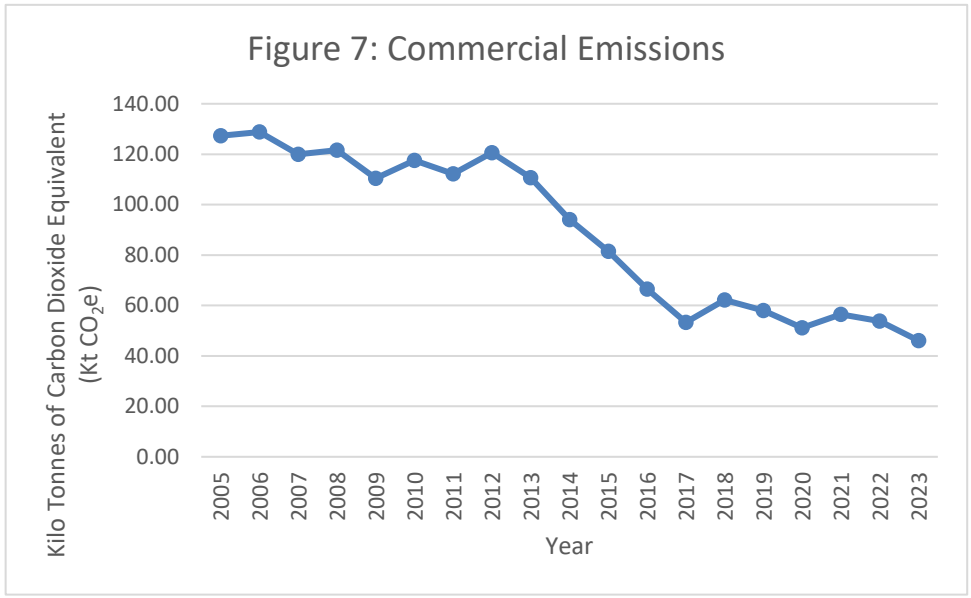
Figure 7: Commercial Emissions
Kilo Tonnes of Carbon Dioxide Equivalent (Kt CO_2e)
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Year

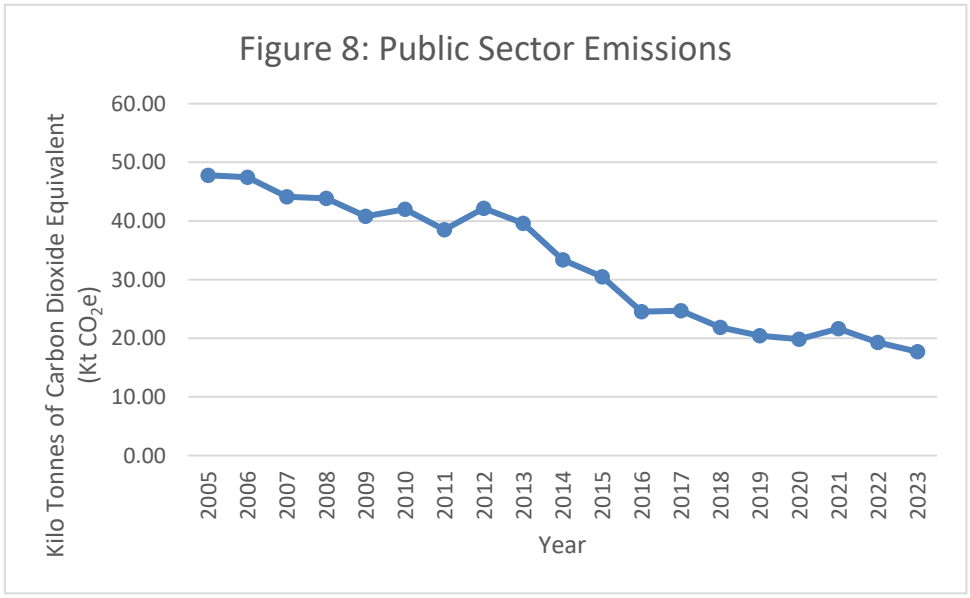
Figure 8: Public Sector Emissions
Kilo Tonnes of Carbon Dioxide Equivalent (Kt CO_2e)
60.00
50.00
40.00
30.00
20.00
10.00
0.00
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Year

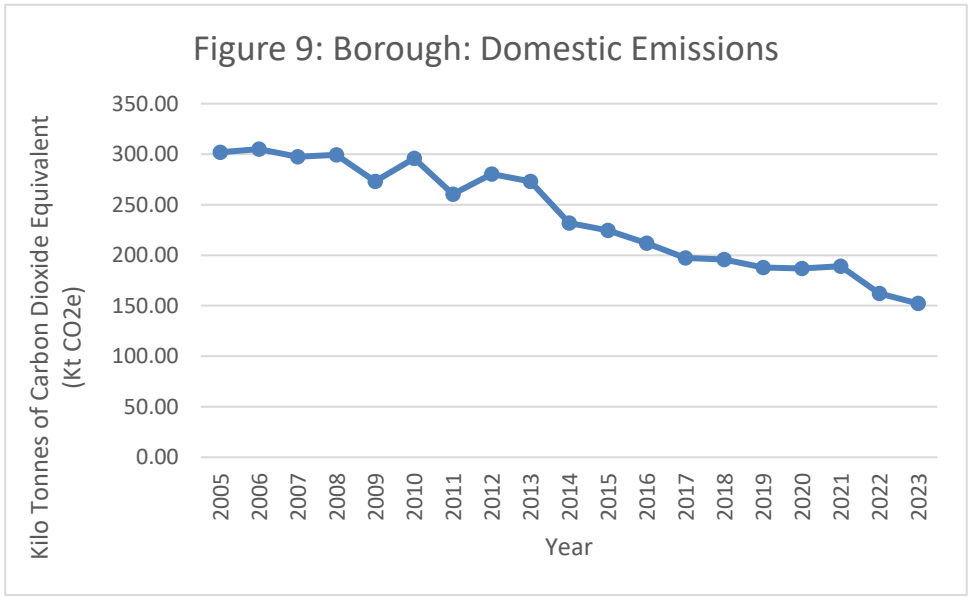
Figure 9: Borough: Domestic Emissions
Kilo Tonnes of Carbon Dioxide Equivalent (Kt CO2e)
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Year

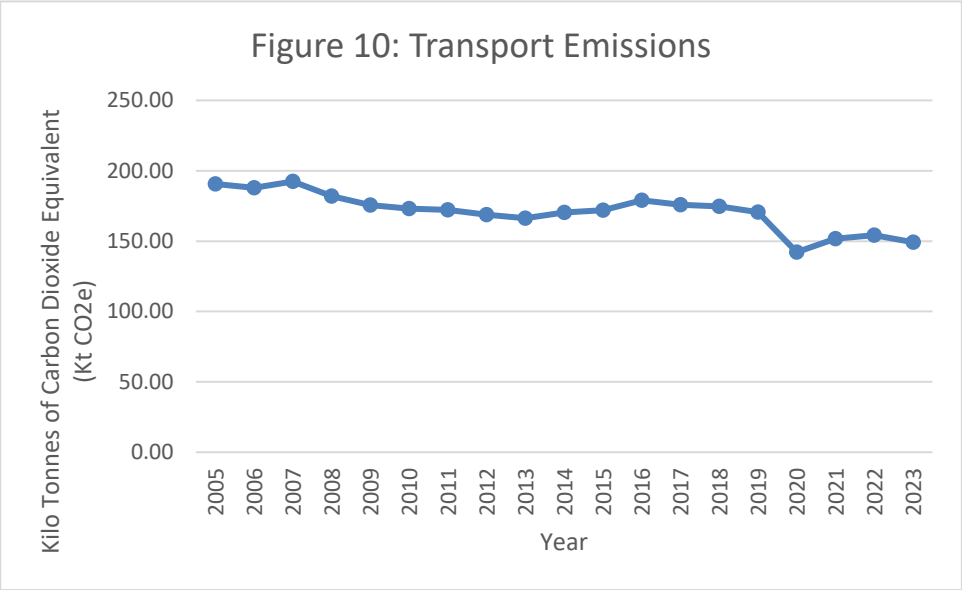
Figure 10: Transport Emissions
Kilo Tonnes of Carbon Dioxide Equivalent (Kt CO2e)
250.00
200.00
150.00
100.00
50.00
0.00
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Year

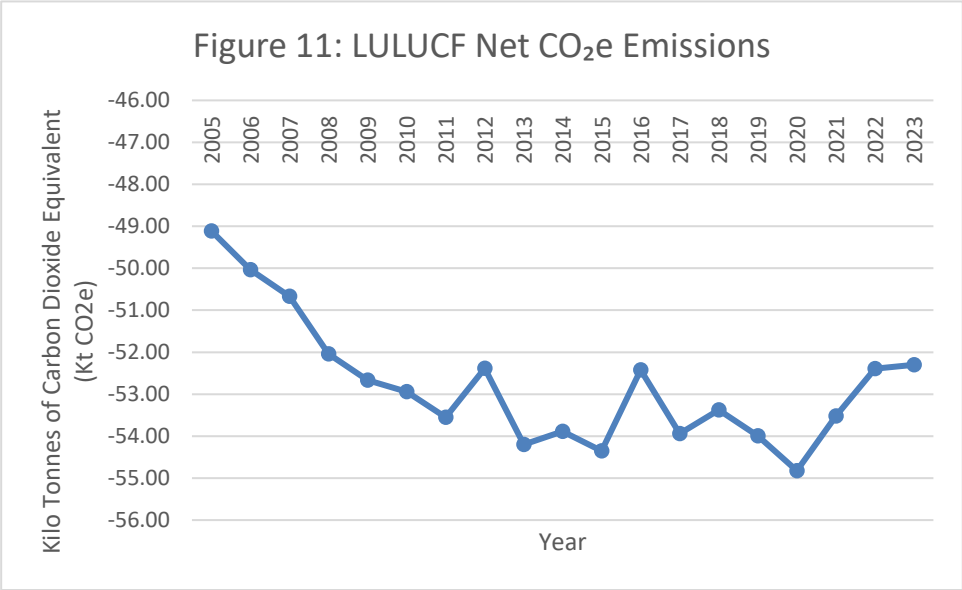
Figure 11: LULUCF Net CO_2e Emissions
Kilo Tonnes of Carbon Dioxide Equivalent (Kt CO2e)
-46.00
-47.00
-48.00
-49.00
-50.00
-51.00
-52.00
-53.00
-54.00
-55.00
-56.00
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Year

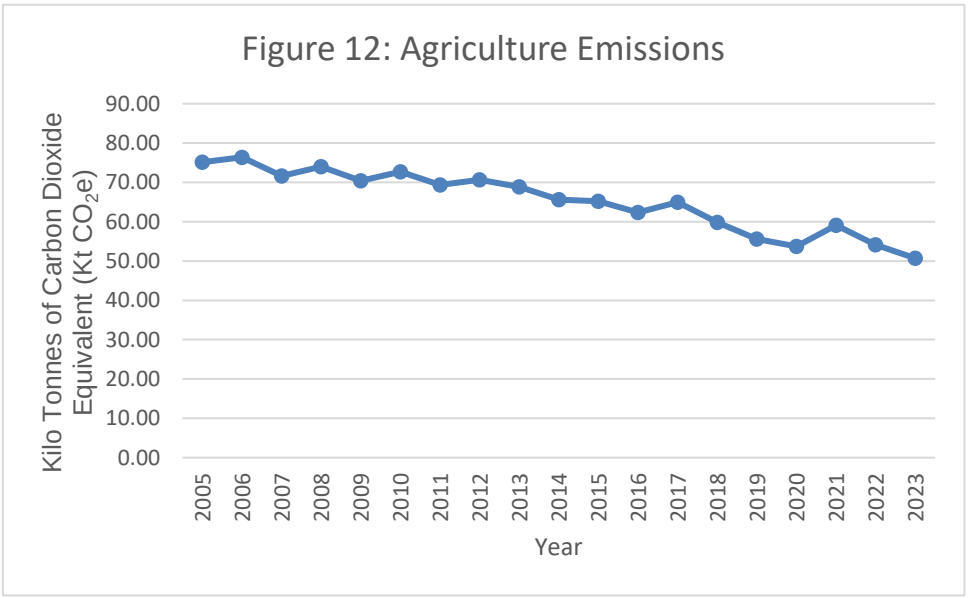
Figure 12: Agriculture Emissions
Kilo Tonnes of Carbon Dioxide Equivalent (Kt CO_2e)
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Year

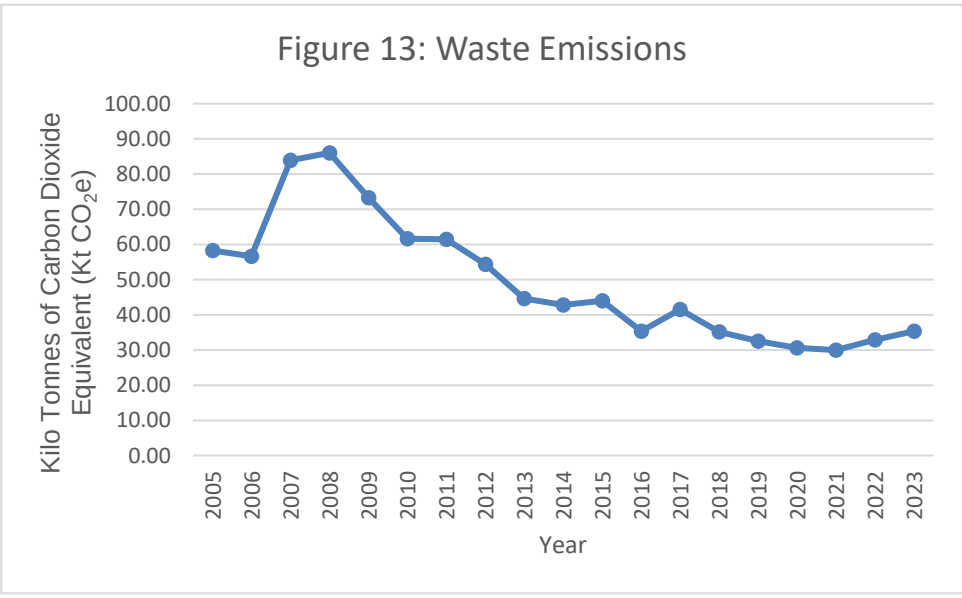
Figure 13: Waste Emissions
Kilo Tonnes of Carbon Dioxide Equivalent (Kt CO_2e)
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Year

7. Appendix 1: Tunbridge Wells Borough Emissions Breakdown