

## Broadland District Council Carbon Footprint report for 2022/23

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## Background to this Report

This report calculates the greenhouse gas emissions arising from the council's own activities. 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<sub>2</sub>e), calculated using the UK Government's 2022 carbon conversion factors.

Broadland District Council
Thorpe Lodge, Yarmouth Road, Norwich, NR7 0DU
1st April 2022 to 31 <sup>st</sup> March 2023

In September 2022 Broadland Council purchased the Horizon Centre with South Norfolk Council as the new office base for both councils. From April 2022 until October 2022 staff were working in both Thorpe Lodge and South Norfolk House. In October South Norfolk House closed and staff moved to Thorpe Lodge. Energy use associated with Thorpe Lodge has been assigned to Broadland District Council's carbon footprint and South Norfolk House to South Norfolk Council's carbon footprint.

The Horizon Centre opened for all staff in June 2023, which falls outside of this reporting period. There are emissions from energy use associated with the Horizon Centre for this reporting period (2022/23), as we must account for emissions once it was purchased by the Councils, even if the building was not yet operational. The purchase of the Horizon Centre was in September 2022 which falls within this reporting period. These emissions have been split 50/50 between the councils.

## Scopes and Inclusions

Scope	Fuel/Activity	Location	Data Source
Scope 1	Main gas	Thorpe Lodge	Bills/meter reads
		Carrowbreck house	Bills/meter reads
		Horizon Centre	Meter reads
		Temporary Accommodation	Bills
	Heating oil	Frettenham Depot	Provided by Veolia
	Diesel in owned vehicles	Energy van Handyperson van	DVLA record Estimated annual mileage
	Biomass wood chip	Frettenham Depot	Provided by Veolia
Scope 2	Electricity	Thorpe Lodge	Bills/meter reads
	Electricity	Carrowbreck House	Bills/meter reads
	Electricity	Frettenham Depot	
	Electricity	Horizon Centre	Meter Reads
	Electricity	Streetlights	Bills
	Electricity	Broadland Food Innovation Centre	Bills
	Electricity	Toilets	Bills
	Electricity	Temporary Accommodation	Bills
Scope 3	Mileage	Staff and councillor business travel	Mileage based on 6 months of data. Extrapolation of sample for vehicle and fuel type
	HVO	Waste Fleet (Veolia operated)	Litres fuel recorded
	Waste disposal in council buildings	Thorpe Lodge	Waste notices and estimates of volume and frequency of bin emptying
	Waste disposal in council buildings	Carrowbreck House	Waste notices and estimates of volume and frequency of bin emptying
	Water use in council buildings	Thorpe Lodge Carrowbreck House	Estimated
	Electricity transmission and distribution losses	Thorpe Lodge, Carrowbreck House, Frettenham Depot, Horizon Centre, Streetlights, Broadland Food Innovation Centre, Temporary Accommodation, Toilets	Bills/meter reads
Outside of Scopes	HVO	Waste Fleet (Veolia Operated)	

Scope 1: These are Direct Emissions which arise from the activities of an organisation 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 organisation.

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 and also those associated with the 'Transmission and Distribution' (T&D) of electricity purchased by the organisation.

Scope 3 can include a wide range of indirect emission sources such as supply and demand chains and staff commuting emissions although at present the data is not available for this.

For Broadland the waste fleet is operated by Veolia so the emissions associated with this fall into scope 3. Water use and waste disposal from owned buildings is also included in scope 3.

#### Outside of Scopes

The waste vehicles operated by Veolia previously used diesel, but since April 2022 they have instead used HVO fuel. The in-scope emissions for HVO, do not include any of the carbon dioxide from the vehicle's tailpipe associated with combustion, because the carbon dioxide emissions are accounted for by being absorbed when the crop was grown. This is based on conversion factors produced by Government. It is required to report the carbon emissions associated with the use of HVO fuel in an outside of scopes section which does not count towards the footprint total.

#### Inclusions

Buildings that are owned and operated by the councils have been included – where the council pays the energy bills.

Example calculation method:

**Electricity use (kWh) x conversion factor associated with grid electricity = emissions kgCO<sub>2</sub>e**

## GHG Emissions Statement

Broadland District Council's Carbon Footprint for 2022/23 has been calculated as 325.30 tCO<sub>2</sub>e, the breakdown is shown in Table 1

	<b>2022/23</b>	<b>tCO<sub>2</sub>e</b>
<b>Scope 1</b>	Natural Gas	100.43
	Heating Oil	6.18
	Biomass	0.30
	Authority owned vehicles	2.94
<b>Scope 2</b>	Electricity	115.79
<b>Scope 3</b>	Employee & Councillor business travel	61.81
	Transmission and Distribution losses from Electricity consumption	10.59
	Waste Disposal (from Council operated buildings)	4.33
	Water Use	0.44
	Diesel grounds maintenance – From Ketteringham Depot	8.05
	HVO fuel – Frettenham Depot	16.54
<b>Total in scope</b>		<b>327.40</b>
<b>Outside of Scope</b>	HVO fuel - Frettenham Depot	1,148.21

## Intensity Measurement

In 2021 the population of Broadland was 131,700. This can be used to calculate an intensity measurement of kgCO<sub>2</sub>e per resident.

This then allows for comparison with other councils. It should be noted though that not all councils offer the same services or report on the same activities.

Table 2 shows a comparison with other councils in Norfolk

<b>Council</b>	<b>GHG emissions (tCO<sub>2</sub>e)</b>	<b>Population</b>	<b>Intensity ration (kgCO<sub>2</sub>e per resident)</b>
Broadland	325.30	131,700	2.48
South Norfolk	2,038.38 (2022/23)	141,900	14.36
Norwich	3,078 (2020/21)	144,000	21.375
Breckland	4,119 (2022/23)	141,500	29.12
Kings Lynn and West Norfolk	2,997.0 (2020/21)	154,300	19.42

## Breakdown of Emissions

Figure 1: Emissions by source

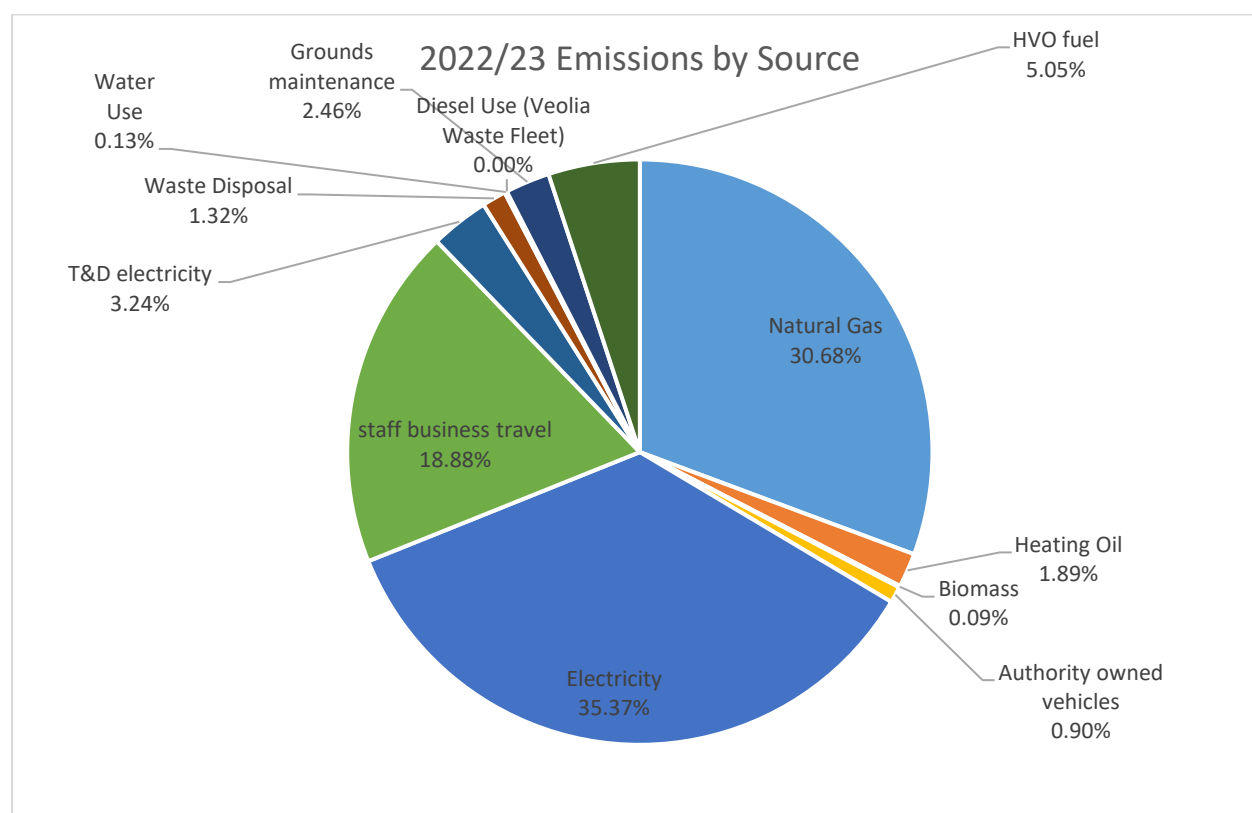


Figure 1 shows that the largest proportion of emissions comes from electricity then gas associated with building use. Staff Business Travel accounts for 18.88% of the emissions.

Figure 2: Piechart of emissions from building/activity

### Emissions by building/activity 2022/23

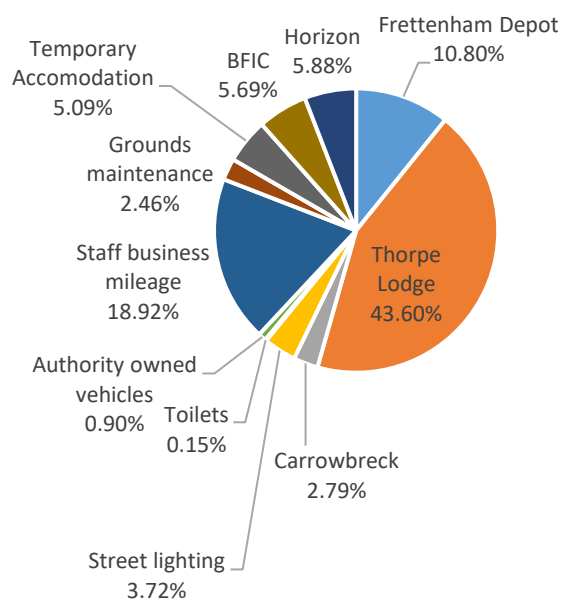


Figure 2 shows which building or activity the emissions are associated with. Thorpe Lodge makes up the highest proportion, followed by Frettenham Depot including HVO use. In previous years Frettenham Depot made up approximately 75% of the emissions, but the switch from diesel to HVO fuel has significantly reduced this.

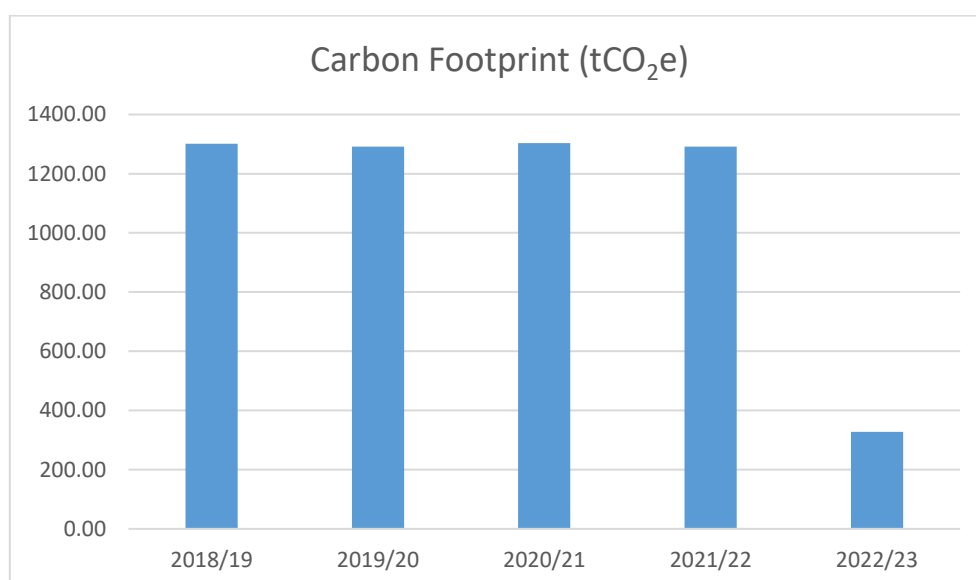


## Emissions Trends

Table 3 shows the changes in emissions over time.

	2018/19	2019/20	2020/21	2021/22	2022/23
<b>Scope 1</b>	66.88	68.01	64.92	91.87	109.85
<b>Scope 2</b>	163.57	147.76	121.04	106.63	115.79
<b>Scope 3</b>	1070.30	1075.38	1117.36	1092.87	101.76
<b>Total gross emissions</b>	1300.75	1291.15	1303.32	1291.38	327.40
<b>Renewable electricity generated</b>					24,496 kWh generated saving 5.17 tCO <sub>2</sub> e avoided from grid electricity
<b>Offsets</b>	0	0	0	0	0
<b>Green tariff</b>	0	0	0	0	0
<b>Total annual net emissions</b>	1300.75	1291.15	1303.32	1291.38	327.40
<b>Outside of scopes</b>					1148.214

Figure 3 trends in carbon footprint



The largest change since the previous year is the reduction in emissions from the Veolia waste fleet, as this previously made up such a large proportion of the footprint there is a significant overall reduction. This is due to the switch from diesel to HVO. HVO has very low emissions that are in scope for the carbon footprint. This is

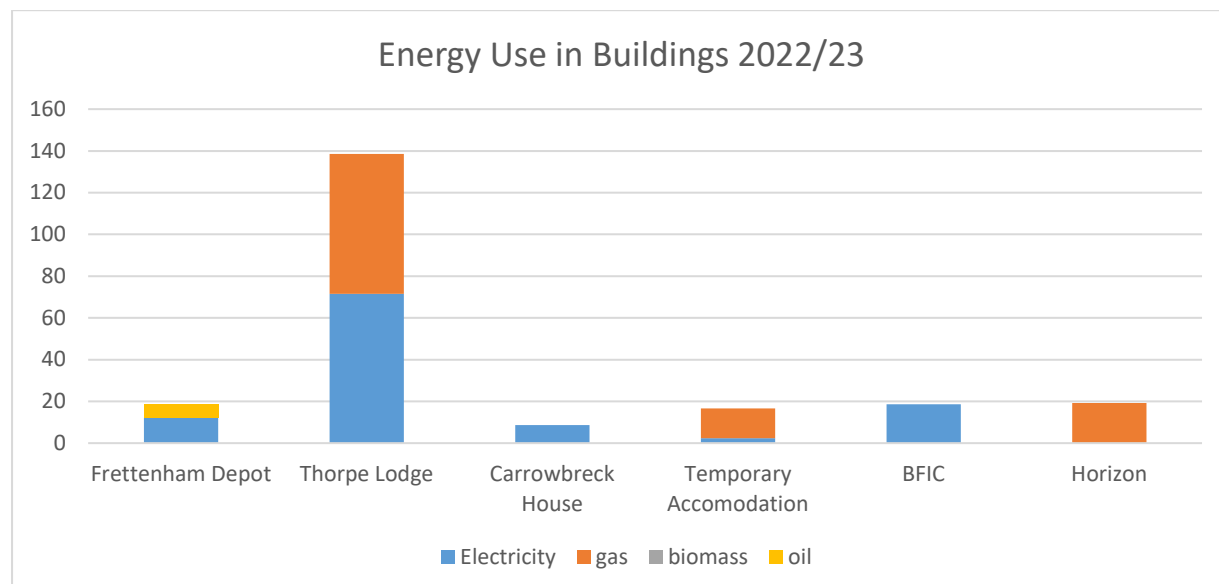
because the carbon emissions associated with the use of HVO are already accounted for by the carbon sequestered when the crop was grown. Therefore, the only in scope emissions are from other greenhouse gases released when the HVO is used. The carbon emissions associated with the HVO are reported as out of scope emissions.

The energy use at Thorpe Lodge has remained stable since the previous year (2021/22). There was higher occupancy from October 2022 as South Norfolk house closed so more staff were using Thorpe Lodge. This caused a small increase in electricity use, but a warmer year meant that gas consumption reduced slightly.

We have also added in emissions from the Horizon Centre, which have caused an increase in building emissions. In future years there will only be one building, and the gas boilers at the Horizon Centre are being replaced by air source heat pumps.

## Energy Use in Buildings

Figure 4: Energy use by building



The bar chart shows the energy use from the different buildings that the council operates. Thorpe Lodge, the main office base, has by far the highest emissions. This was the last full year of occupancy at Thorpe Lodge, and for part of this building the offices were closer to the full capacity associated with pre-Covid operations. This was because the South Norfolk office closed during this period, so all staff had Thorpe Lodge as the office base.

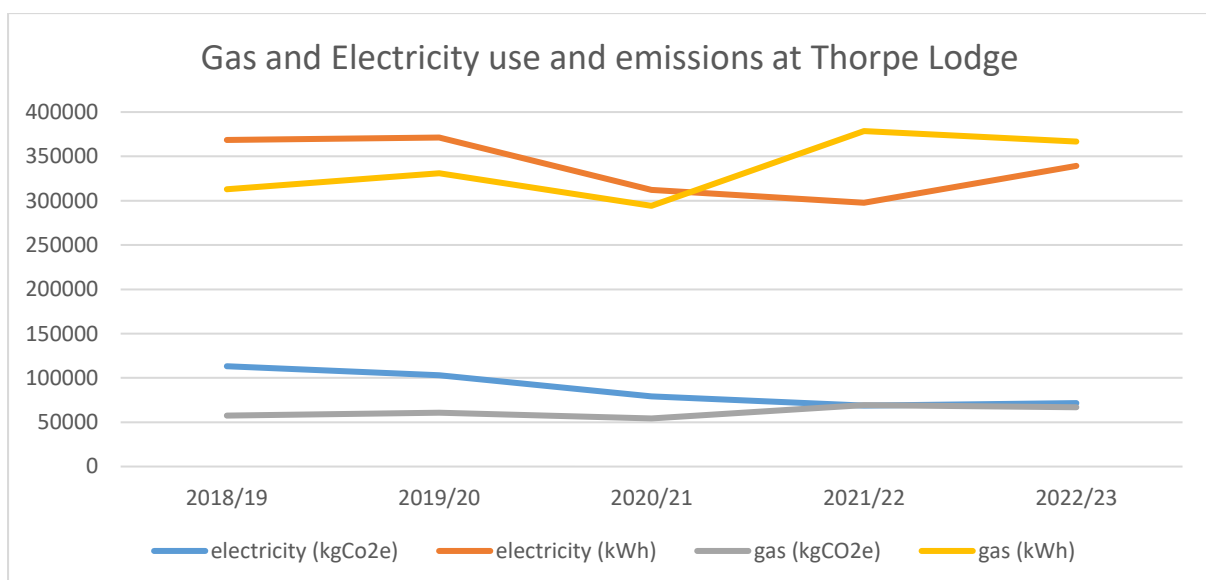
## Thorpe Lodge

Thorpe Lodge was the main office building for Broadland District Council in 2022/23. Since the COVID-19 pandemic, council staff use a hybrid working policy, with officers' time split between the office and home. This continued throughout 2022/23, in October 2022 South Norfolk House closed so more staff were using the Thorpe Lodge office.

Table 4 – trends in emissions in tCO<sub>2</sub>e

	2018/19	2019/20	2020/21	2021/22	2022/23
Electricity	113.2	103	79.1	68.8	71.6
Gas	57.6	60.9	54.3	69.3	66.9
Waste	5.89	5.87	1.98	2.93	3.92

Figure 5– chart to show trends in gas and electricity use and emissions



## Explanations

Electricity emissions have increased slightly, this is due to more staff using the Thorpe Lodge office since October 2022. The gas emissions have decreased slightly, due to a warmer year and a busier office means that less heating is required to achieve the same temperature.

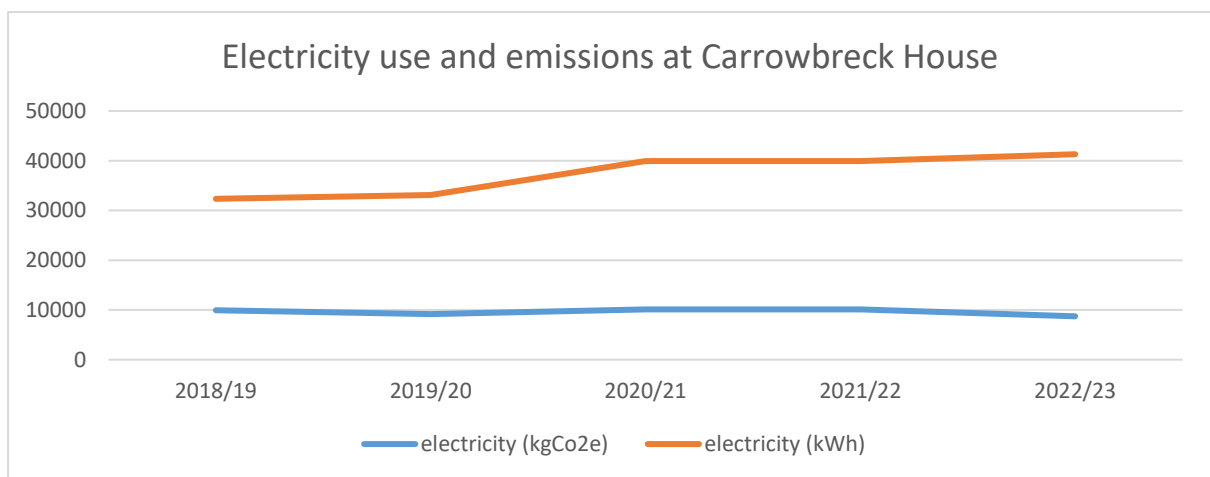
## Carrowbreck House

Carrowbreck House is our training centre, it has solar panels and a ground source heat pump.

Table – trends in emissions

	2018/19	2019/20	2020/21	2021/22	2022/23
<b>Electricity</b>	9.16	8.46	9.31	8.57	7.99
<b>Electricity T&amp;D</b>	0.78	0.72	0.80	0.76	0.73
<b>Waste</b>	0.61	0.61	0.21	0.30	0.40

Figure 6 – chart to show in electricity use and emissions



### Explanations

There has been a small decrease in electricity use at Carrowbreck House.

## Horizon Centre

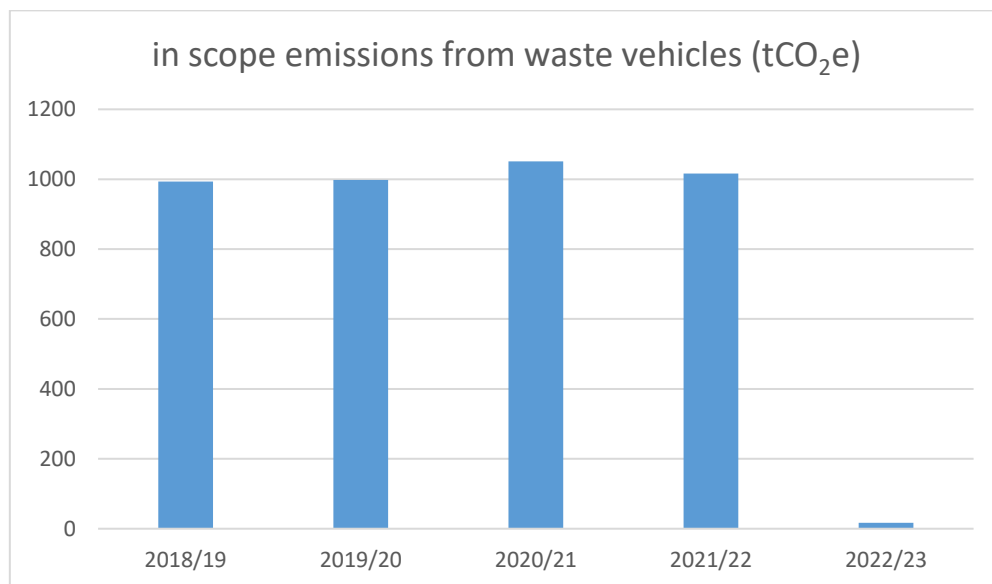
In September 2022 the two councils purchased a new joint office. The building has substantial solar arrays on the building and on solar car ports. The building is heated by gas boilers, but as part of a government funded project these will be replaced with heat pumps in 2024.

There are some emissions from the Horizon Centre included in this report, making up 5.72% of the total footprint. These are included because the building was owned by the Councils during this period even though it was not operational as an office.

## Transport related emissions

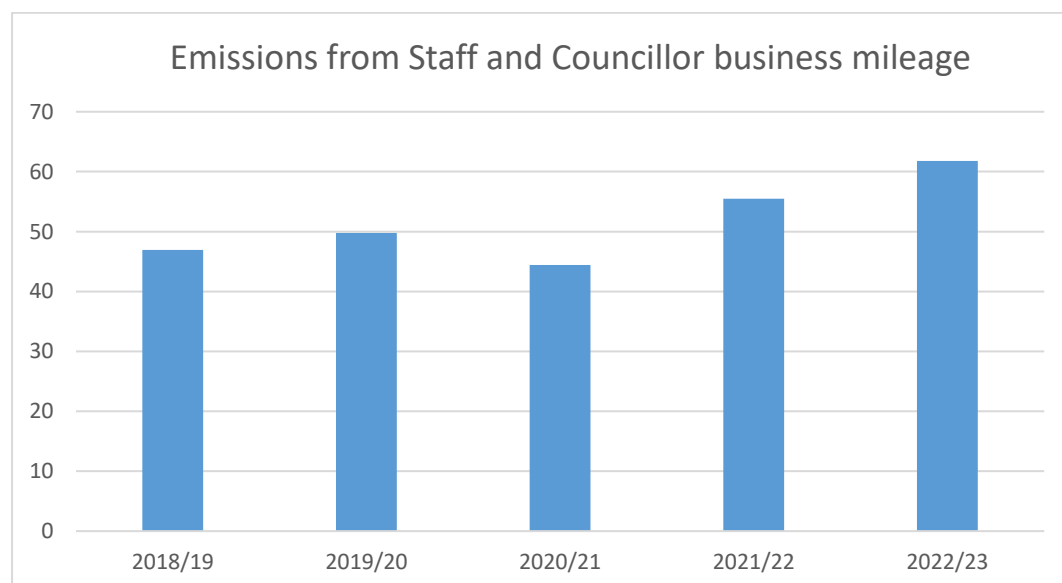
### Waste and Street scene fleet

Emissions from the waste fleet operated by Veolia have dropped by 1,000 tonnes since 2021/22. This is due to the switch from diesel to HVO.



### Staff travel

The emissions associated with staff and member business travel are 61.8tCO<sub>2</sub>e or 238,053 miles. This is an increase since last year and the baseline year.



Staff business mileage in their own vehicles has been calculated based on the mileage data supplied. The fuel and engine size was provided, this was then

separated into the engine size categories as provided in the 2022 DESNZ conversion factors. In previous years this data was not available, so this is the most accurate calculation of emissions from staff travel.



## Appendix

<b>Scope 1</b>		<b>2018/19</b>	<b>2019/20</b>	<b>2020/21</b>	<b>2021/22</b>	<b>2022/23</b>	<b>2023/24</b>	<b>2024/25</b>	<b>2025/26</b>
<b>Building/Activity</b>	<b>fuel</b>	<b>emissions</b>	<b>emissions</b>	<b>emissions</b>	<b>emissions</b>	<b>emissions</b>	<b>emissions</b>	<b>emissions</b>	<b>emissions</b>
Thorpe Lodge	gas	57.59	60.87	54.29	69.33	66.94	0	0	0
Owned vehicles	Diesel	1.94	1.81	2.14	2.43	2.94	0	0	0
Frettenham Depot	heating oil	6.09	4.82	7.62	6.18	6.18	0	0	0
Frettenham Depot	Biomass	1.27	0.51	0.87	1.31	0.30	0	0	0
Horizon Centre	gas					19.20	0	0	0
Temporary Accomodation	gas				12.62	14.29	0.00	0.00	0.00
TOTAL		66.88	68.01	64.92	91.87	108.13	0.00	0.00	0.00
<b>Scope 2</b>		<b>2018/19</b>	<b>2019/20</b>	<b>2020/21</b>	<b>2021/22</b>	<b>2022/23</b>	<b>2023/24</b>	<b>2024/25</b>	<b>2025/26</b>
<b>Building/Activity</b>	<b>fuel</b>	<b>emissions</b>	<b>emissions</b>	<b>emissions</b>	<b>emissions</b>	<b>emissions</b>	<b>emissions</b>	<b>emissions</b>	<b>emissions</b>
Thorpe Lodge	electricity	104.30	94.89	72.80	63.20	65.57	0	0	0
Carrowbreck	electricity	9.16	8.46	9.31	8.57	7.99	0.00	0.00	0.00
Frettenham Depot	electricity	12.06	11.80	10.92	11.34	11.22	0	0	0
Streetlights	electricity	35.39	30.32	26.68	20.48	11.14	0	0	0
Ranworth toilets	electricity	0.29	0.11	0.03	0.03	0.36	0.00	0.00	0.00
Reedham toilets	electricity	0.06	0.08	0.04	0.04	0.12	0.00	0.00	0.00
TSA Toilets	electricity	0.42	0.38	0.00	no longer managed by BDC				
Coltishall toilets	electricity	0.34	0.30	0.22	0.23	0.22	0.00	0.00	0.00
South Walsham toilets	electricity	1.54	1.41	1.04	0.77	0.00	0.00	0.00	0.00
Horizon Centre	electricity					0.01	0	0	0
Salhouse toilets	electricity	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00

BFIC	electricity					17.02			
Temporary Accomodation	electricity				1.97	2.14	0.00	0.00	0.00
TOTAL		163.57	147.76	121.04	106.63	115.45	0.00	0.00	0.00
<b>Scope 3</b>		<b>2018/19</b>	<b>2019/20</b>	<b>2020/21</b>	<b>2021/22</b>	<b>2022/23</b>	<b>2023/24</b>	<b>2024/25</b>	<b>2025/26</b>
<b>Building/Activity</b>	<b>fuel</b>	<b>emissions</b>	<b>emissions</b>	<b>emissions</b>	<b>emissions</b>	<b>emissions</b>	<b>emissions</b>	<b>emissions</b>	<b>emissions</b>
Staff&member busines travel	mileage	46.95	49.75	44.40	55.47	61.81	0	0	0
Thorpe Lodge	electricity T&D	8.89	8.06	6.26	5.59	6.00	0	0	0
Carrowbreck	electricity T&D	0.78	0.72	0.80	0.76	0.73	0.00	0.00	0.00
Frettenham Depot	electricity T&D	1.03	1.00	0.94	1.00	1.03	0	0	0
Streetlights	electricity T&D	3.02	2.57	2.29	1.81	1.02	0	0	0
Ranworth toilets	electricity T&D	0.02	0.01	0.00	0.00	0.03	0.00	0.00	0.00
Reedham toilets	electricity T&D	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00
TSA Toilets	electricity T&D	0.04	0.03	0.00	no longer managed by BDC				
Coltishall toilets	electricity T&D	0.03	0.03	0.02	0.02	0.02	0.02	0.00	0.00
South Walsham toilets	electricity T&D	0.13	0.12	0.09	0.07	0.00	0.00	0.00	0.00
Salhouse toilets	electricity T&D	0.00	0.00	0.00	0.00	still managed by BDC?			
Horizon Centre	electricity T&D					0.00	0	0	0
BFIC	electricity T&D					1.56			
Frettenham Depot	HVO					16.54	0	0	0

Frettenham Depot	diesel	993.26	997.57	1051.26	1016.24	0	0	0	0
Grounds maintenance (SNC depot)	diesel	8.66	8.05	8.04	8.05	8.05	0	0	0
Thorpe Lodge	waste - residual efw	5.39	5.38	1.88	2.68	3.59			
Thorpe Lodge	waste dry recycling	0.02	0.02	0.02	0.01	0.01			
Thorpe Lodge	waste food waste compost	0.47	0.47	0.08	0.23	0.31			
Thorpe Lodge	electrical waste	0.00	0.00	0.00	0.00	0.00			
Thorpe Lodge	sanitary waste	0.00	0.00	0.00	0.00	0.00			
Carrowbreck	waste - residual efw	0.61	0.61	0.21	0.30	0.41	0	0	0
Horizon Centre	waste - residual efw					0	0	0	0
Horizon Centre	waste dry recycling					0	0	0	0
Horizon Centre	waste food waste compost					0	0	0	0
Horizon Centre	electrical waste					0	0	0	0
Horizon Centre	sanitary waste					0	0	0	0
Horizon Centre	water					0.01	0	0	0
Horizon Centre	sewage								

BFIC	water								
Ranworth toilets	water	0.21	0.21	0.19	0.08	0.06	0.00	0.00	0.00
Reedham toilets	water	0.00	0.00	0.02	0.01	0.02	0.00	0.00	0.00
TSA Toilets	water	0.01	0.01	0.00	no longer managed by BDC				
Coltishall toilets	water	0.01	0.01	0.04	0.02	0.03	0.00	0.00	0.00
South Walsham toilets	water	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00
Salhouse toilets	water	0.13	0.13	0.04	0.03	0.03	0.00	0.00	0.00
BFIC	sewage								
Ranworth toilets	sewage	0.38	0.38	0.35	0.13	0.15	0.00	0.00	0.00
Reedham toilets	sewage	0.00	0.00	0.29	0.11	0.02	0.00	0.00	0.00
TSA Toilets	sewage	0.03	0.03	0.00	0.00	no longer managed by BDC			
Coltishall toilets	sewage	0.02	0.02	0.07	0.03	0.08	0.00	0.00	0.00
South Walsham toilets	sewage	0.00	0.00	0.00	0.00	0	0	0	0
Salhouse toilets	sewage	0.19	0.19	0.07	0.05	0.04	-	-	-
Temporary Accomodation	electricity T&D				0.17	0.2			
TOTAL		1070.30	1075.38	1117.36	1092.87	101.72	0.03	0.00	0.00
<b>Outside of Scopes</b>		<b>2018/19</b>	<b>2019/20</b>	<b>2020/21</b>	<b>2021/22</b>	<b>2022/23</b>	<b>2023/24</b>	<b>2024/25</b>	<b>2025/26</b>
Frettenham Depot	HVO					1148.21	0	0	0