Broadland District Council Carbon Footprint report for 2021/22

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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_2e), calculated using the UK Government's 2021 carbon conversion factors.

Broadland District Council
Thorpe Lodge, Yarmouth Road, Norwich, NR7 0DU
1st April 2021 to 31st March 2022

During this period staff were hybrid working between home and the office. The waste fleet operated a full service as usual. Temporary housing accommodation has been added to the footprint this year. This is rented by the council from a private landlord. It has been included as in addition to the temporary housing it includes offices for some of the housing team.

Scopes and Inclusions

Scope	Fuel/Activity	Location	Data Source
Scope 1	Mains gas	Thorpe Lodge	Bills/meter reads
	Mains gas	Temporary Accommodation	Bills/meter reads
		Carrowbreck house	Bills/meter reads
	Heating oil	Frettenham Depot	Estimated based on delivery notes
	Diesel in owned vehicles	Energy van Handyperson van	DVLA record Estimated annual mileage
	Biomass wood chip	Frettenham Depot	Delivery notes
Scope 2	Electricity	Thorpe Lodge	Bills/meter reads
	Electricity	Temporary Accommodation	Bills/meter reads
	Electricity	Carrowbreck House	Bills/meter reads
	Electricity	Frettenham Depot	Bills
	Electricity	Streetlights	Bills
	Electricity	Toilets	Bills
Scope 3	Mileage	Staff and councillor business travel	Mileage based on data from HR system. Extrapolation of sample for vehicle and fuel type
	Diesel	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	All buildings	Emissions associated with transmission and distribution of electricity

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.

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_2e

GHG Emissions Statement

Broadland District Council's Carbon Footprint for 2021/22 has been calculated as 1,278.58 tCO_2e, the breakdown is shown in table 1

	2021/22	**tCO_2e**
Scope 1	Natural Gas	81.95
	Heating Oil	6.18
	Biomass	1.31
	Authority owned vehicles	2.43
Scope 2	Electricity	106.63
Scope 3	staff business travel	55.47
	T&D electricity	9.44
	Waste Disposal	3.23
	Water Use	0.46
	Diesel Use (Veolia Waste Fleet)	1016.24
	Grounds maintenance	8.05
TOTAL		**1,278.58**

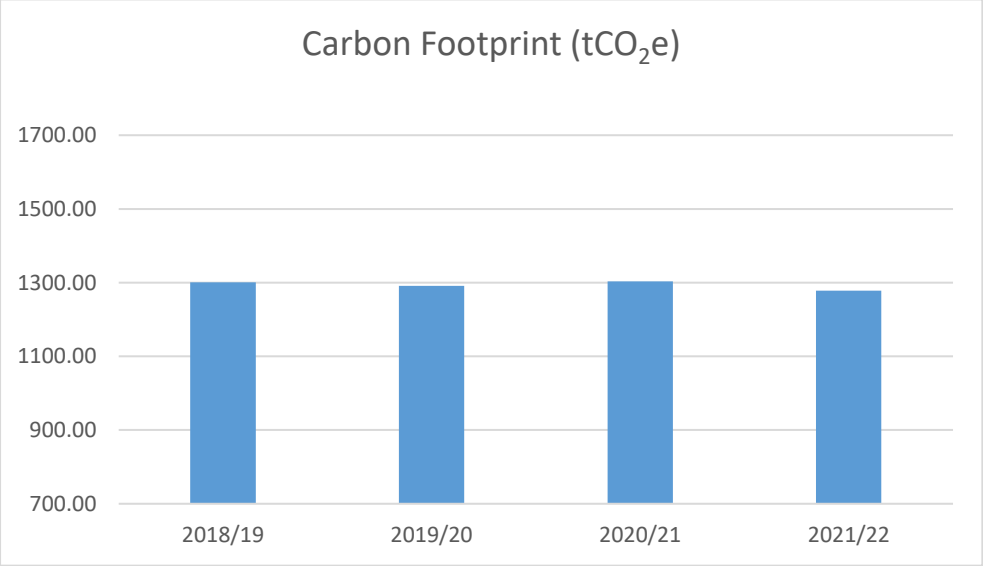


Figure 1: Trends in emissions

As figure 1 shows the total footprint has been fairly stable over the last 4 years. 2021/22 is lower than both the baseline (-1.7%) and previous years (-1.9%).

Intensity Measurement

In 2021 the population of Broadland was 131,700. This can be used to calculate an intensity measurement of kgCO_2e 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

Council	GHG emissions (tCO2e)	Population	Intensity ration (kgCO2e per resident)
Broadland	1,278.58	131,700	9.70
South Norfolk	2,284.60	141,900	16.09
Norwich	3,077 – 2020/21	144,000	21.36
Breckland	5,084 – 2019/20	141,500	35.9
Kings Lynn and West Norfolk	2,997 – 2020/21	154,300	19.42

Breakdown of Emissions

Figure 2: Pie chart of emissions from source

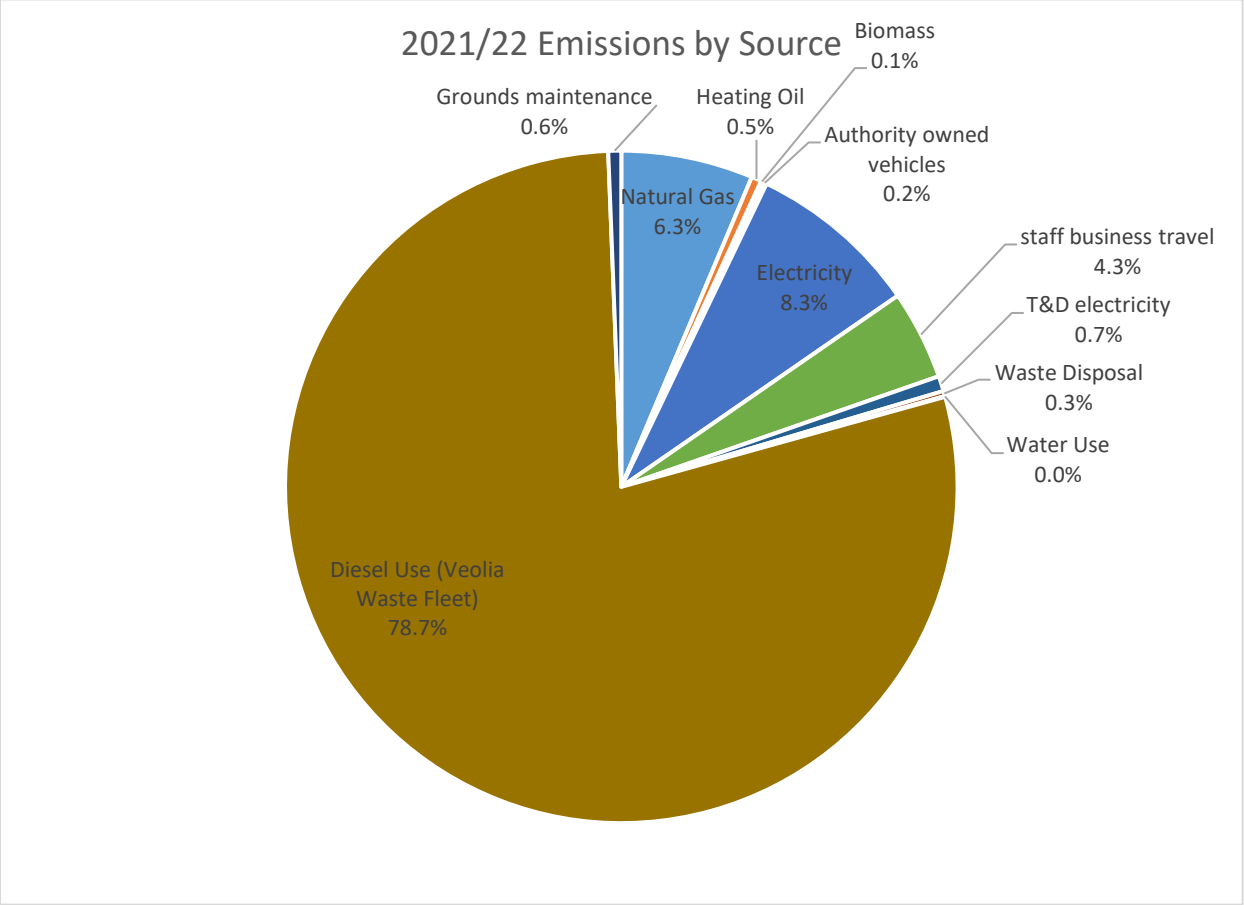


Figure 2 shows the source of the emissions. The diesel use in the waste fleet account for 79% of total emissions, with electricity accounting for 8%, natural gas for 6%, staff business travel for 4% and all other emissions sources account for 1% or less.

Figure 3: Pie chart of emissions from building/activity

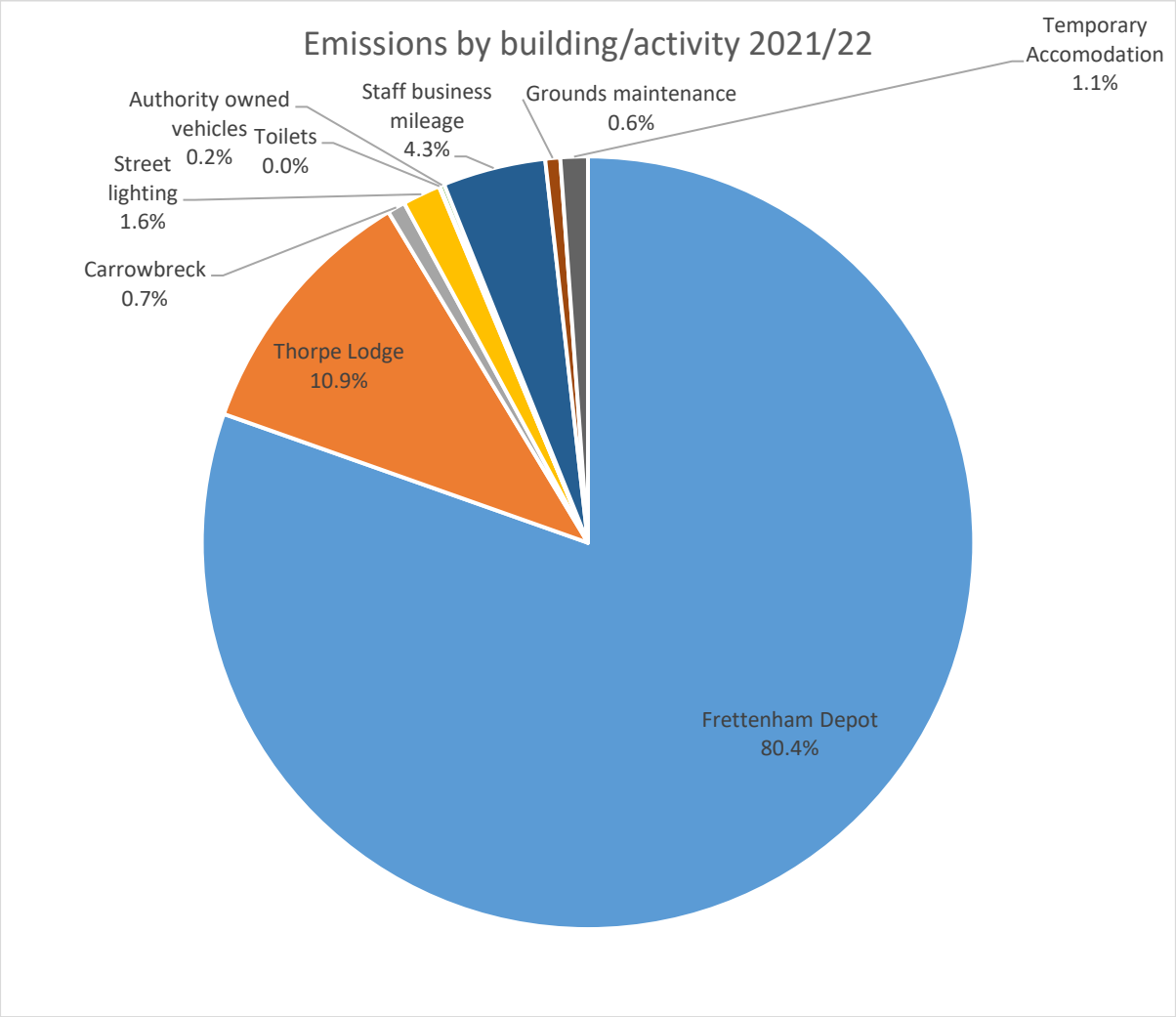


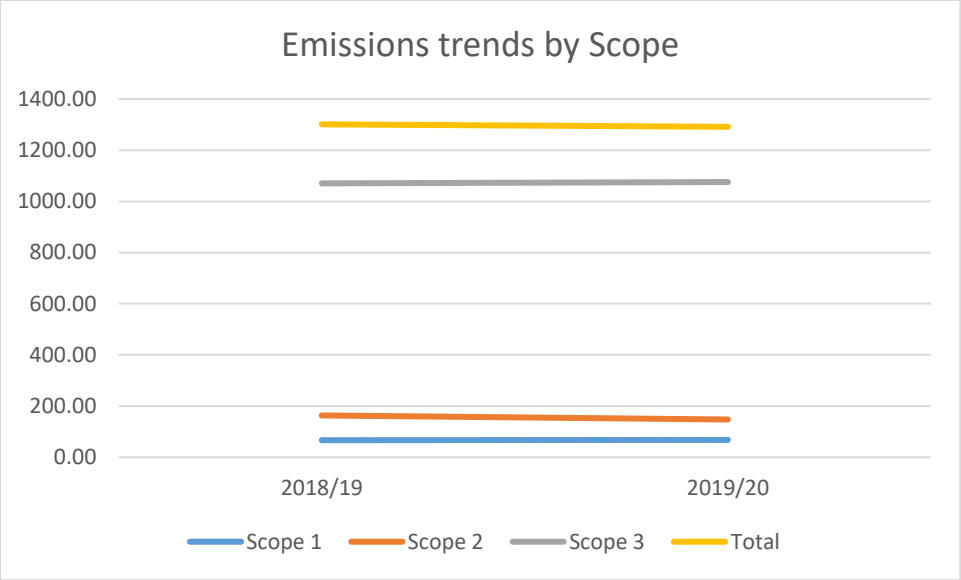
Figure 3 shows that 80% of emissions are from Frettenham Depot, 11% from Thorpe Lodge and 4% from staff business mileage. All other buildings and activities account for 2% or less.

Emissions Trends

Table 3 shows the changes in emissions over time.

	2018/19	2019/20	2020/21	2021/22
Scope 1	66.88	68.01	64.92	79.25
Scope 2	163.57	147.76	121.04	106.63
Scope 3	1070.30	1075.38	1117.36	1092.70
Total gross emissions	**1300.75**	**1291.15**	**1303.32**	**1278.58**
Offsets	0	0	0	0
Green tariff	0	0	0	0
Total annual net emissions	1300.75	1291.15	1303.32	1278.58
Outside of scopes	0	0	0	0

Figure 3: Emissions by Scope

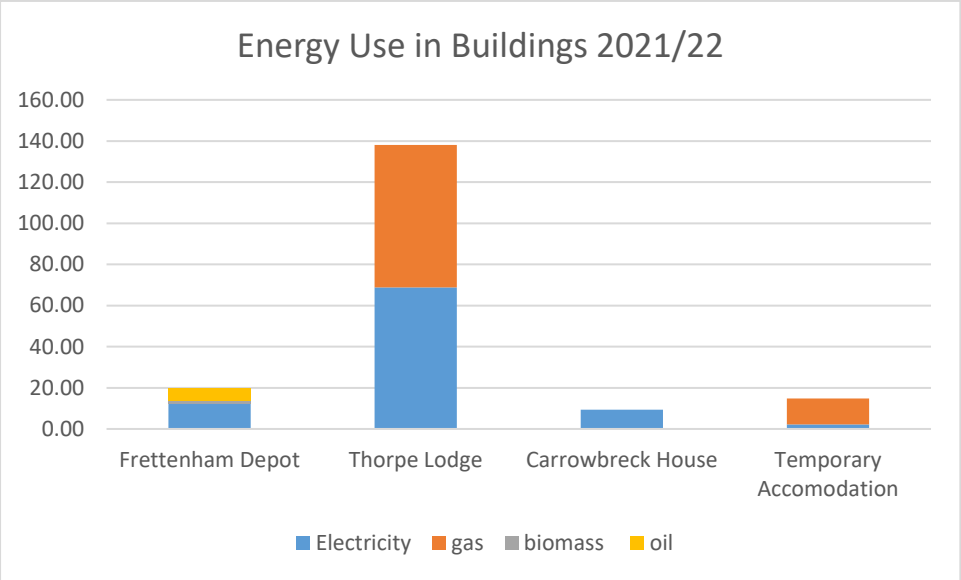


The chart shows that there has been no significant change in any of the scopes.

Energy Use in Buildings

Electricity and gas usage has been provided from meter readings.

Figure 4: Energy use in buildings



The chart shows that most of the building emissions are from Thorpe Lodge, this is split between gas and electricity. Frettenham Depot, Carrowbreck and the Temporary Accommodation building represent a small proportion of the total.

Thorpe Lodge

This is our main office building in 2021/22 it was partially occupied by staff, while staff also work from home

Table 4: Trends in emissions

	2018/19	2019/20	2020/21	2021/22
Electricity	104.30	94.89	72.80	63.20
Electricity T&D	8.89	8.06	6.26	5.59
Gas	57.59	60.87	54.29	69.33
Waste	5.88	5.87	1.98	2.93

Figure 5: Electricity use and associated emissions at Thorpe Lodge

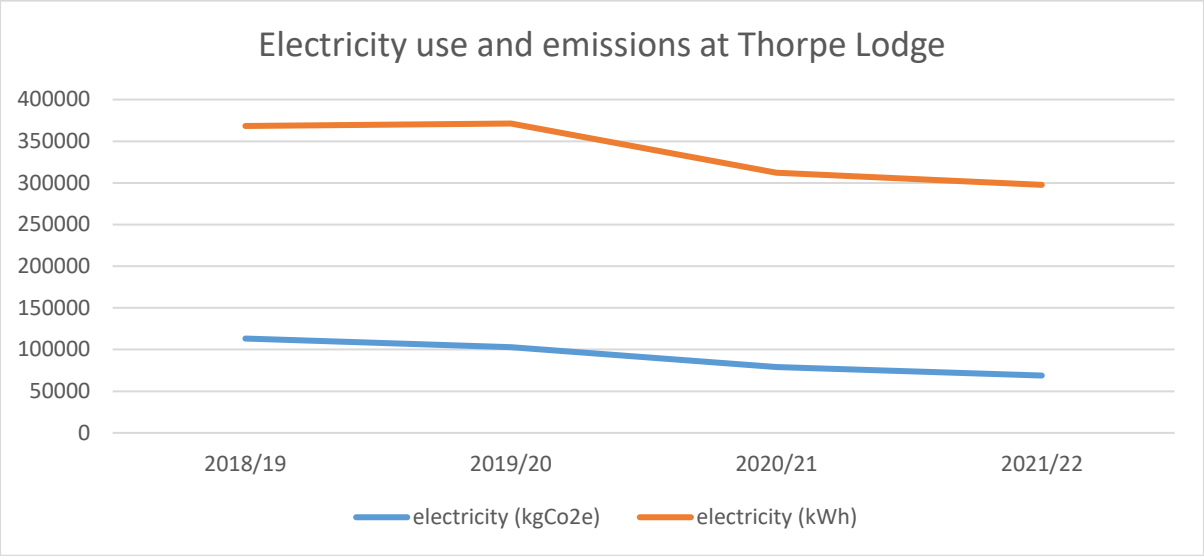


Figure 5 shows a reduction in electricity use and emissions since the baseline year in 2018-19. This has been due to a reduction in computer use as staff work from home and decarbonisation of the electricity grid.

Figure 6: Gas use and associated emissions at Thorpe Lodge

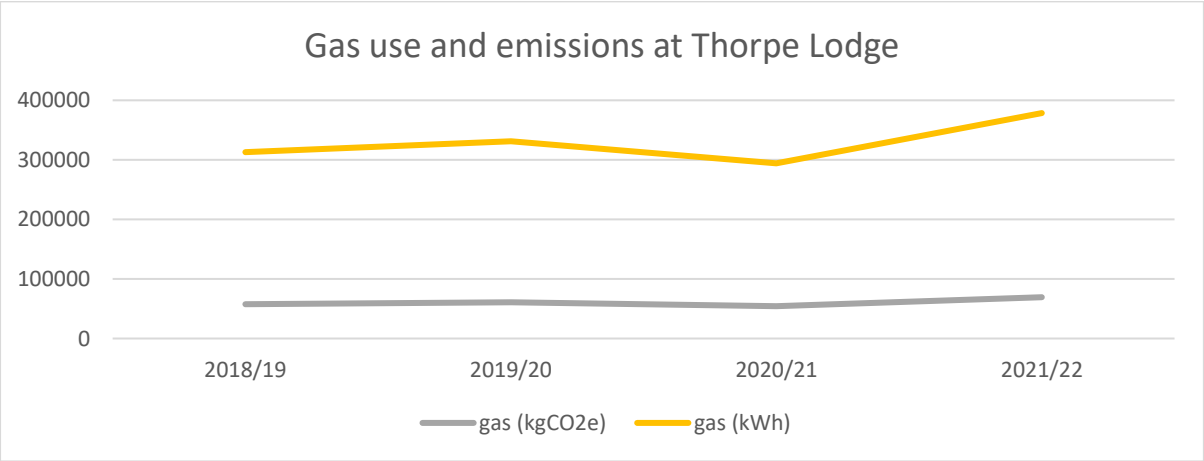


Figure 6 shows the gas use and emissions. These emissions have been stable with an increase in 2021/22. This increase has been due to colder weather and continued reduced occupancy both of which require more heating to maintain the same internal temperature.

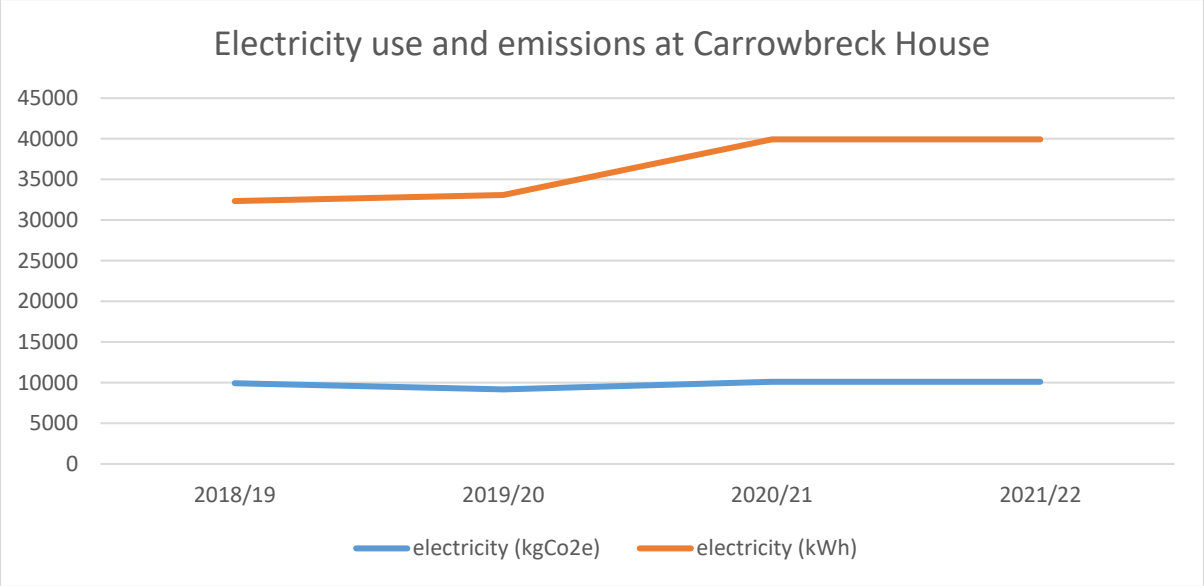
Carrowbreck House

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

Table 5: Trends in emissions

	2018/19	2019/20	2020/21	2021/22
Electricity	9.16	8.46	9.31	8.57
Electricity T&D	0.78	0.72	0.80	0.76
Waste	0.61	0.61	0.21	0.30

Figure 7: Electricity use and associated emissions at Carrowbreck House



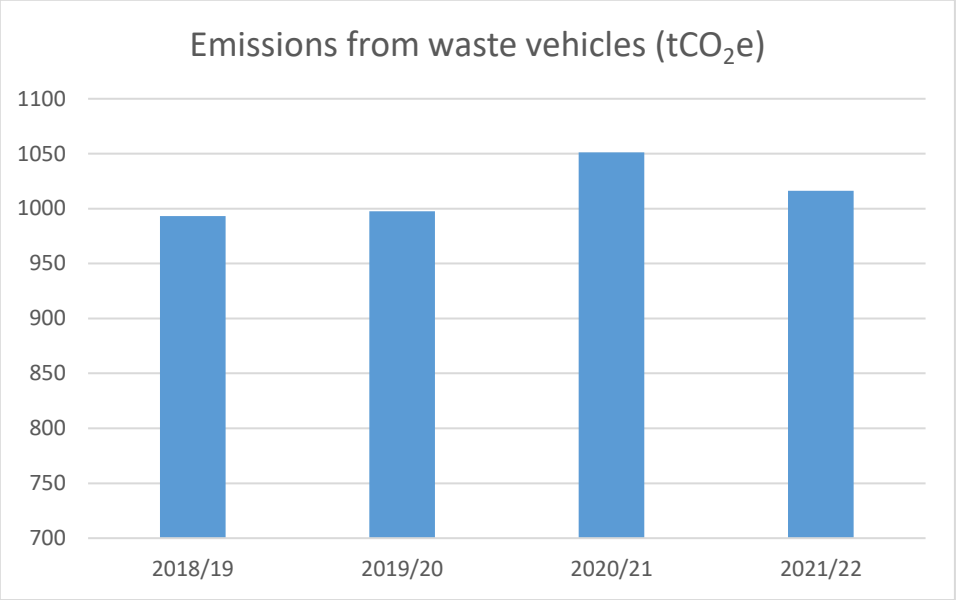
Emissions have remained fairly constant since the baseline year. Electricity use during this period has risen but the decarbonisation of the grid means that the emissions have decreased a little.

Transport related emissions

Waste and Street scene fleet

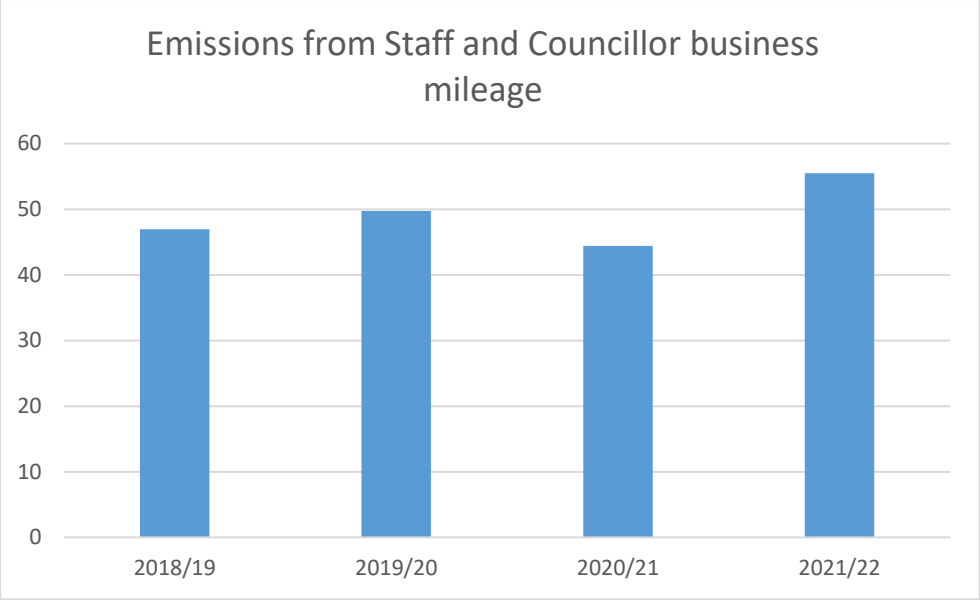
Emissions associated with the waste fleet are the largest emitter. The emissions have decreased since last year. This is the last year of diesel use, from April 2022 the fleet switched to HVO fuel.

Figure 8: Trends in emissions from waste fleet.



Staff and member travel

The emissions associated with staff and member business travel are 55.5tCO_2e. This is an increase compared to last year and the baseline year. This is because as we have moved out of Covid restrictions, staff and members needed to travel more. Online meetings are used where possible to reduce travel needs.



Staff business mileage in their own vehicles has been estimated based on the mileage data supplied, this was not available by fuel type in the recorded data. A sample of the vehicle's registrations were checked for fuel type against the government records and a proportion then extrapolated over the entire mileage and average vehicle conversion factors were used. This mileage accounts for a more significant 55.5tCO2e.

Water Emissions

Limited water meter data was available for the Broadland District Council properties. Carbon emissions from staff and public welfare facilities water consumption can be insignificant however the wider environmental impacts of water consumption and wastewater disposal may be considered in future environmental reports so should be part of the monitoring systems

Waste Emissions

Commercial waste data supplied for Thorpe Lodge indicates that there are three main waste streams; dry recycling, food waste and residual, with the residual waste going to incineration (energy from waste)

The government conversion factors for recycling, anaerobic digestion and incineration (energy from waste) emissions per kg are the same.
All of these waste options emit considerably less carbon emissions than if the waste went to landfill.

The most powerful way to reduce emissions from waste is to reduce the amount produced e.g. reduced printing and selective procurement

During 2021/22 there was an estimated 50% reduction in waste produced, from the baseline year. This was due to hybrid working which significantly reduced the occupancy of the offices.

Appendix

Scope 1		2018/19	2019/20	2020/21	2021/22
Building/Activity	**fuel**	**emissions**	**emissions**	**emissions**	**emissions**
Thorpe Lodge	gas	57.59	60.87	54.29	69.33
Owned vehicles	Diesel	1.94	1.81	2.14	2.43
Frettenham Depot	heating oil	6.09	4.82	7.62	6.18
Frettenham Depot	Biomass	1.27	0.51	0.87	1.31
Temporary Accommodation	gas				12.62
TOTAL		66.88	68.01	64.92	79.25

Scope 2		2018/19	2019/20	2020/21	2021/22
Building/Activity	**fuel**	**emissions**	**emissions**	**emissions**	**emissions**
Thorpe Lodge	electricity	104.30	94.89	72.80	63.20
Carrowbreck	electricity	9.16	8.46	9.31	8.57
Frettenham Depot	electricity	12.06	11.80	10.92	11.34
Streetlights	electricity	35.39	30.32	26.68	20.48
Ranworth toilets	electricity	0.29	0.11	0.03	0.03
Reedham toilets	electricity	0.06	0.08	0.04	0.04
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
South Walsham toilets	electricity	1.54	1.41	1.04	0.77
Salhouse toilets	electricity	0.02	0.01	0.01	0.01
Temporary Accommodation	electricity				1.97
TOTAL		163.57	147.76	121.04	106.63

Scope 3		2018/19	2019/20	2020/21	2021/22
Building/Activity	**fuel**	**emissions**	**emissions**	**emissions**	**emissions**
Staff & member business travel	mileage	46.95	49.75	44.40	55.47
Thorpe Lodge	electricity T&D	8.89	8.06	6.26	5.59
Carrowbreck	electricity T&D	0.78	0.72	0.80	0.76
Frettenham Depot	electricity T&D	1.03	1.00	0.94	1.00
Streetlights	electricity T&D	3.02	2.57	2.29	1.81
Ranworth toilets	electricity T&D	0.02	0.01	0.00	0.00
Reedham toilets	electricity T&D	0.00	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
South Walsham toilets	electricity T&D	0.13	0.12	0.09	0.07
Salhouse toilets	electricity T&D	0.00	0.00	0.00	0.00

Frettenham Depot	diesel	993.26	997.57	1051.26	1016.24
Grounds maintenance (SNC depot)	diesel	8.66	8.05	8.04	8.05
Thorpe Lodge	waste - residual efw	5.39	5.38	1.88	2.68
Thorpe Lodge	waste dry recycling	0.02	0.02	0.02	0.01
Thorpe Lodge	waste food waste compost	0.47	0.47	0.08	0.23
Thorpe Lodge	electrical waste	0.00	0.00	0.00	0.00
Thorpe Lodge	sanitary waste	0.00	0.00	0.00	0.00
Carrowbreck	waste - residual efw	0.61	0.61	0.21	0.30
Ranworth toilets	water	0.21	0.21	0.19	0.08
Reedham toilets	water	0.00	0.00	0.02	0.01
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
South Walsham toilets	water	0.00	0.00	0.00	0.00
Salhouse toilets	water	0.13	0.13	0.04	0.03
Ranworth toilets	sewage	0.38	0.38	0.35	0.13
Reedham toilets	sewage	0.00	0.00	0.29	0.11
TSA Toilets	sewage	0.03	0.03	0.00	0.00
Coltishall toilets	sewage	0.02	0.02	0.07	0.03
South Walsham toilets	sewage	0.00	0.00	0.00	0.00
Salhouse toilets	sewage	0.19	0.19	0.07	0.05
Temporary Accommodation	electricity T&D				0.17
TOTAL		1070.30	1075.38	1117.36	1092.70
1,2,3	TOTAL	1300.75	1291.15	1303.32	1278.58
	% change prev year		-0.7%	0.9%	-1.9%
	% change baseline		-0.7%	0.2%	-1.7%