

Broadland District Council Carbon Footprint report for 2020/21

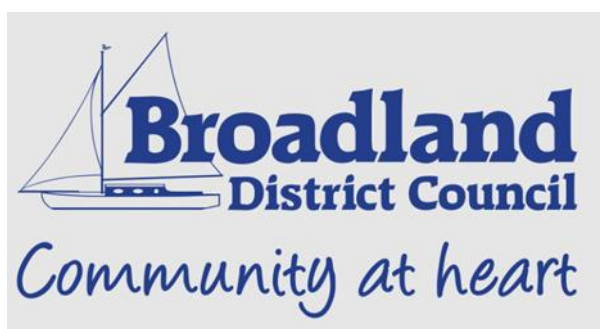


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Background to this Report

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 (CO₂e), calculated using the UK Government's 2020 carbon conversion factors.

Broadland District Council
Thorpe Lodge, Yarmouth Road, Norwich, NR7 0DU
1st April 2020 to 31 st March 2021

In 2020-21 Broadland Council staff and South Norfolk staff were working together as one team. The pandemic had a huge impact on council activities from March 2020 many staff were working from home and some were unable to carry out visits that would usually form part of their work. Thorpe Lodge Offices remained open throughout the lockdowns as some staff needed to be in the office.

Scopes and Inclusions

Table 1 - data sources of energy use

Scope	Fuel/Activity	Location	Data Source
Scope 1	Main gas	Thorpe Lodge	Bills/meter reads
		Carrowbreck house	Bills/meter reads
	Heating oil	Frettenham Depot	Deliveries
	Diesel in owned vehicles	Energy van Handyperson van	DVLA record Estimated annual mileage
	Biomass wood chip	Frettenham Depot	Deliveries
Scope 2	Electricity	Thorpe Lodge	Bills/meter reads
	Electricity	Carrowbreck House	Bills/meter reads
	Electricity	Frettenham Depot	Bills/meter reads
	Electricity	Streetlights	Bills
	Electricity	Toilets	Bills
Scope 3	Mileage	Staff and councillor business travel	Mileage based on 6 months of data. 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	Owned toilets	Bills

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 kgCO₂e

GHG Emissions Statement

Broadland District Council's Carbon Footprint for 2020/21 has been calculated as 1,303.32 tCO₂e, the breakdown is shown in table 2

Table 2: Emissions by scope and activity

	2020/21	tCO ₂ e
Scope 1	Natural Gas	54.29
	Heating Oil	7.62
	Biomass	0.87
	Authority owned vehicles	2.14
Scope 2	Electricity	121.04
Scope 3	Employee & Councillor business travel	44.4
	Transmission and Distribution losses from Electricity consumption	10.41
	Waste Disposal (from Council operated buildings)	2.19
	Water Use	1.05
	Diesel use – waste fleet	1051.26
Total all scopes		1,303.32 (0.2% increase from 2018/19 and 0.9% increase from 2019/20)

Intensity Measurement

In 2020 the population of Broadland was 131,931. This can be used to calculate an intensity measurement of kgCO₂e 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 3 shows a comparison with other councils in Norfolk

Council	GHG emissions (tCO ₂ e)	Population	Intensity ration (kgCO ₂ e per resident)
Broadland	1,303	131,931	9.87
South Norfolk	2095.09	143,066	14.65
Norwich	3,078	142,177	21.64
Breckland	No 2020/21 report	141,255	
Kings Lynn and West Norfolk	2,997	151,245	19.8

Breakdown of Emissions

Figure 1: Piechart of emissions from source

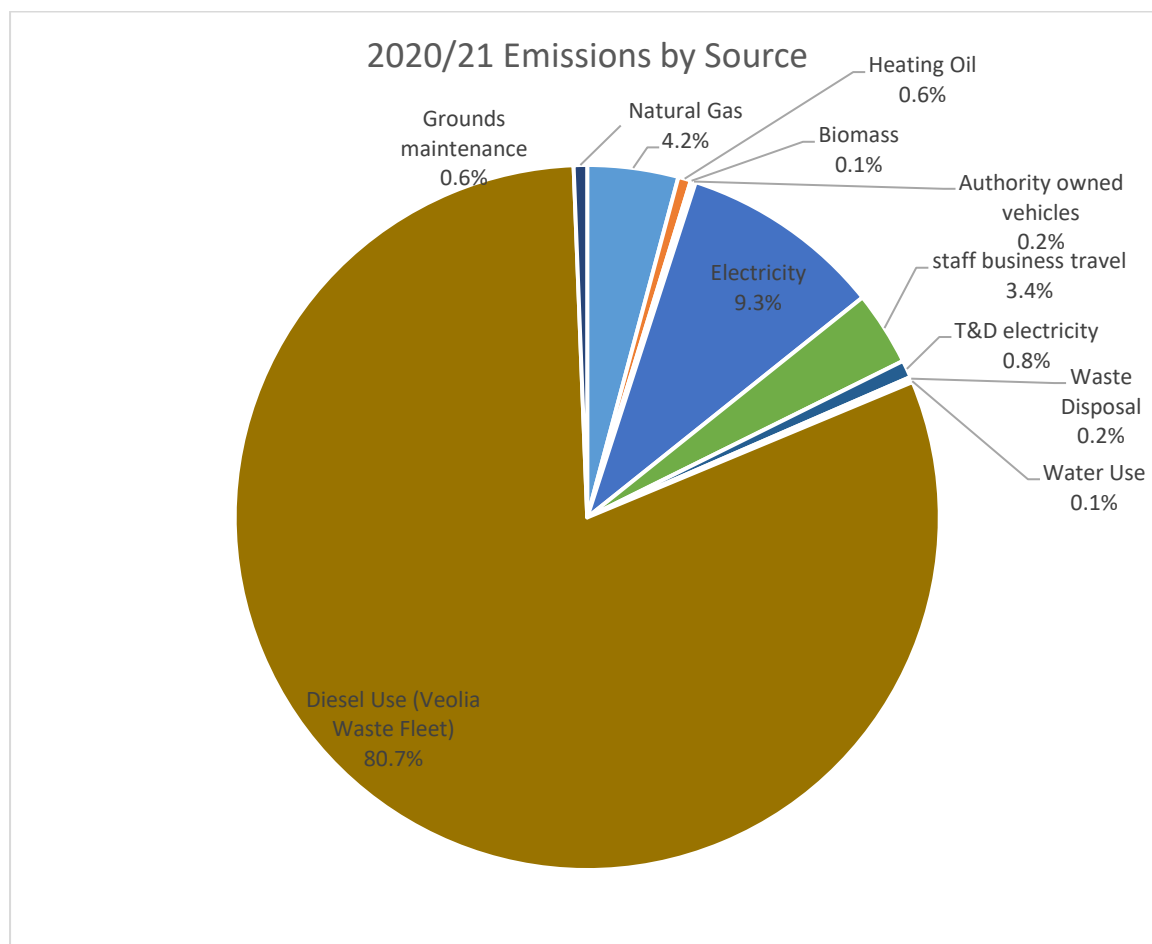
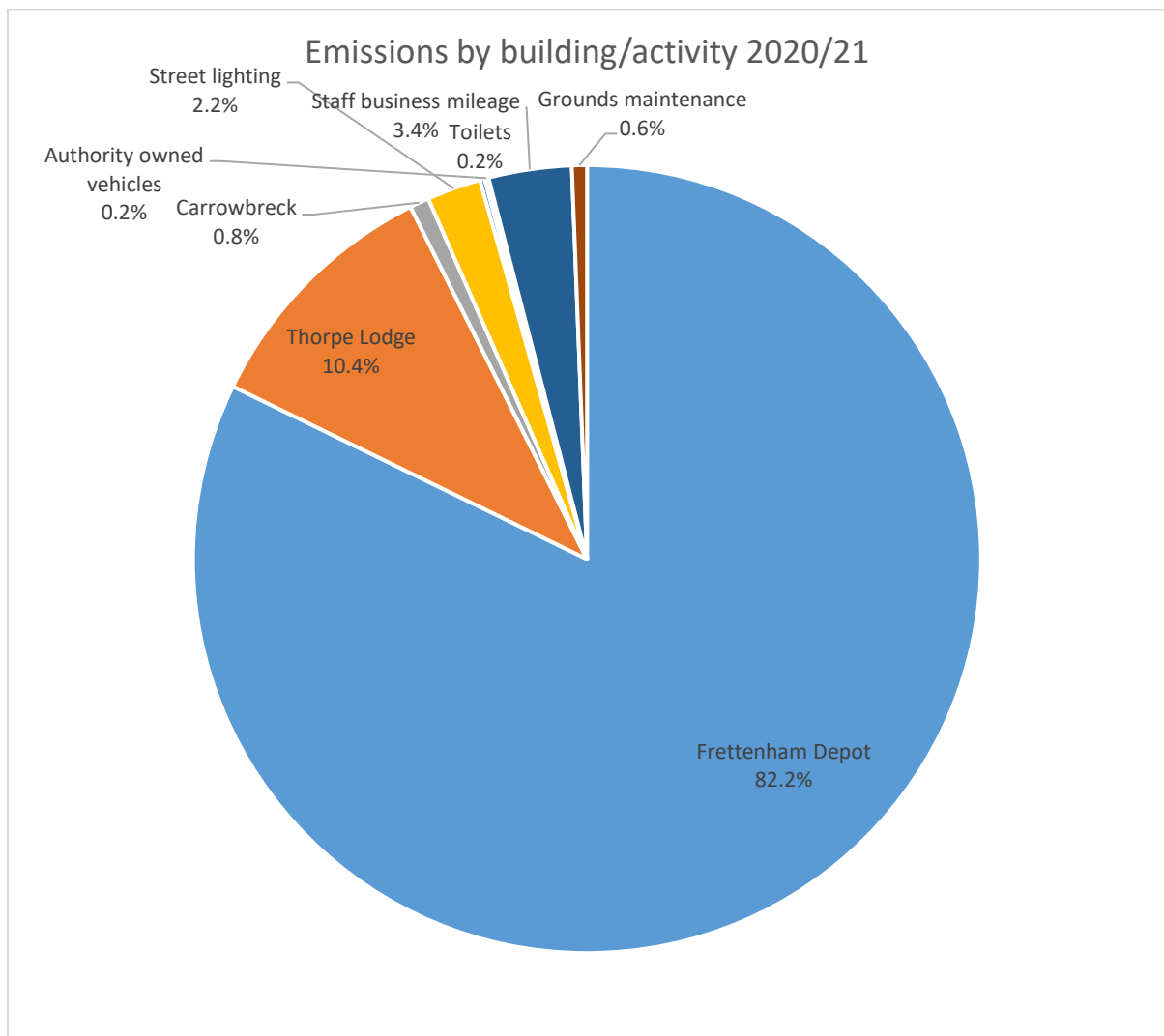


Figure one shows that 81% of emissions are from diesel use in the waste fleet, the second highest figure is electricity at 9% and natural gas use and staff business travel at 4% each. Since the baseline year of 2018/19 the proportion of emissions from the waste fleet has grown as more miles have been travelled by the waste vehicles and reductions in energy use in buildings have been made.

Figure 2: Piechart of emissions from building/activity



82% of emissions are from Frettenham depot and the waste fleet, Thorpe Lodge office building is second at 10%, staff business mileage at 3% and street lighting at 2%.

Emissions Trends

Table 4 shows the changes in emissions over time.

	2018/19	2019/20	2020/21
Scope 1	66.88	68.01	64.92
Scope 2	163.57	147.76	121.04
Scope 3	1070.3	1075.38	1117.36
Total gross emissions	1300.75	1291.15	1,303.32
Offsets	0	0	0
Green tariff	0	0	0
Total annual net emissions	1300.75	1291.15	1,303.32
Outside of scopes	n/a	n/a	n/a

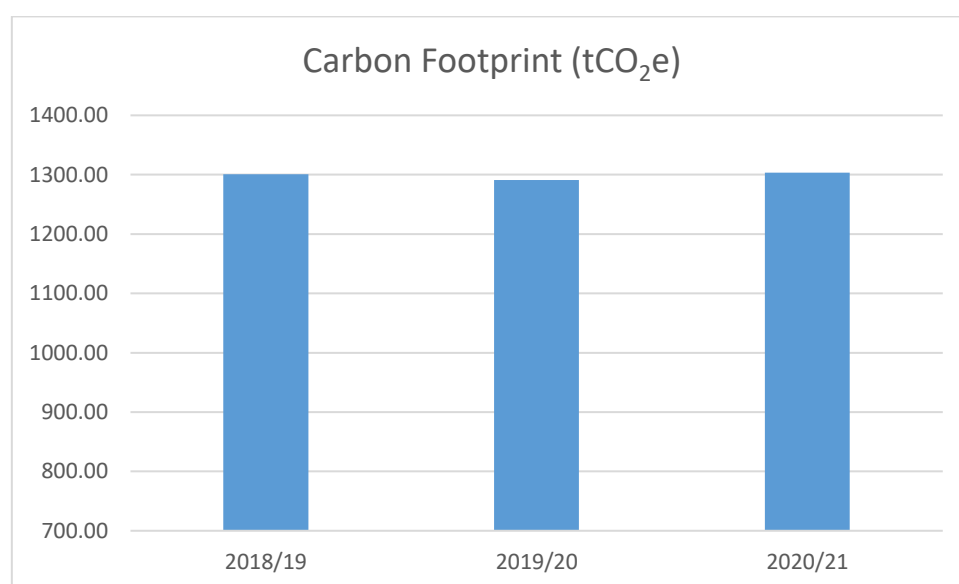


Figure 3 Total emissions by year

The chart and table show that there has been an increase in emissions for 2020/21 compared to both 2019/20 (0.9%) and 2018/19 (0.2%), though this has been very small, less than 1% in both cases. There have been reductions in Scope 1 and 2 emissions which are a result of improvements and more effective energy management in buildings, and some reduced use due to the pandemic and lockdowns. The increase in emissions has come in scope 3 from increased diesel use from the Veolia waste vehicles.

Energy Use in Buildings

Electricity and gas usage has been provided from meter readings. Oil and biomass are based on deliveries during the year.

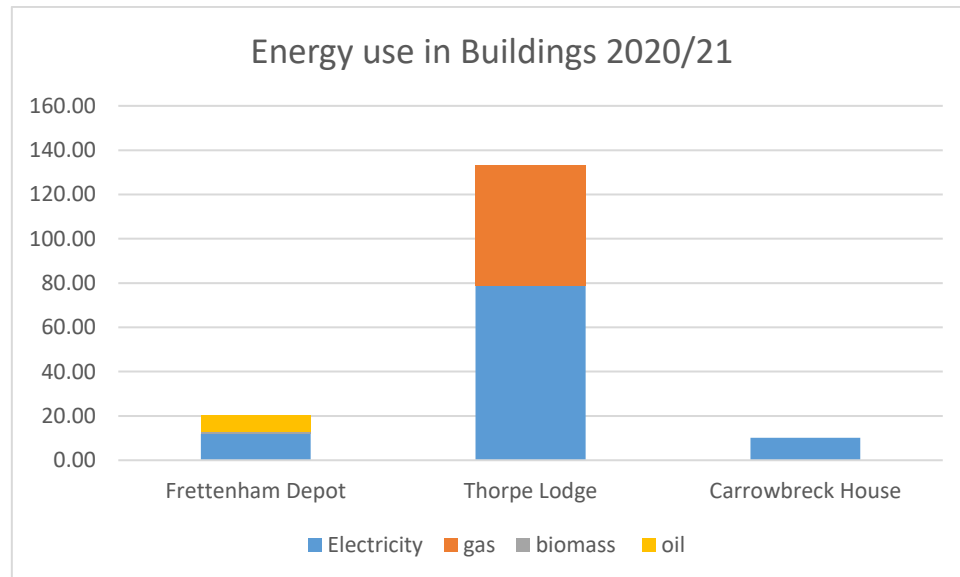


Figure 4 shows 10.23% of overall emissions are from Thorpe Lodge, 0.78% from Carrowbreck House and 1.56% from Frettenham Depot building.

Thorpe Lodge

Description of building

Table 5 – trends in emissions

	2018/19	2019/20	2020/21
Electricity	104.3	94.9	54.3
Electricity T & D	8.9	8.1	6.3
Gas	57.6	60.9	78.6
Waste	5.9	5.9	2.0

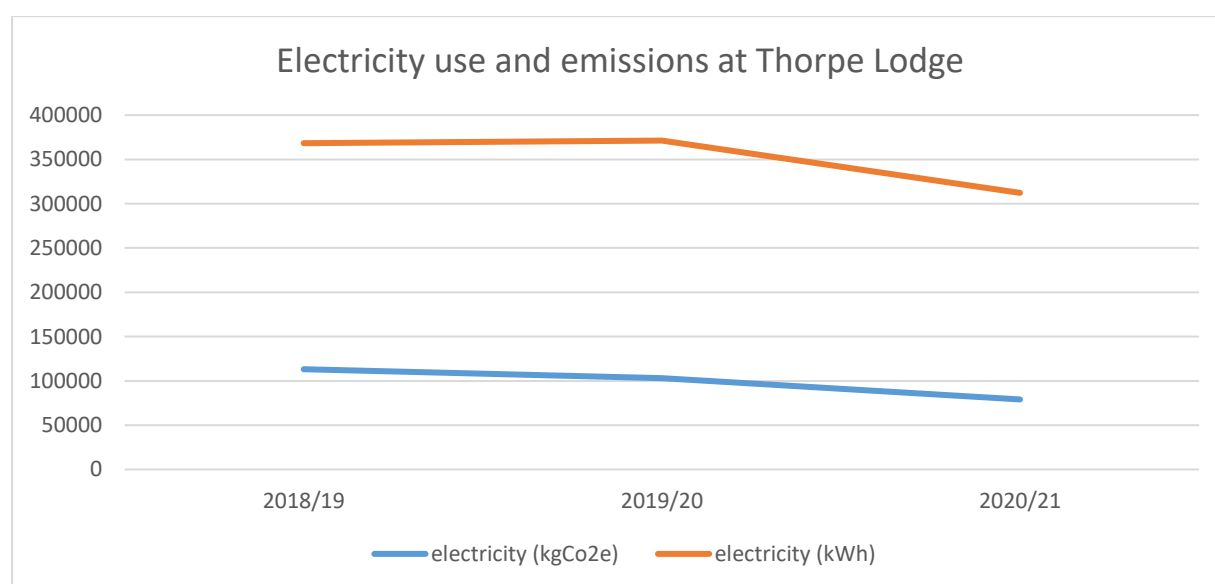


Figure 5 shows that there has been a decrease in electricity use and associated emissions from 2018/19 to 2020/21.

The decrease in electricity is mainly down to updates and changes in LED lighting around the site including a number of outside lights. Also IT desk top equipment which has much lower consumption, a small amount of automatic switching in the meeting room lights will add to the decrease.

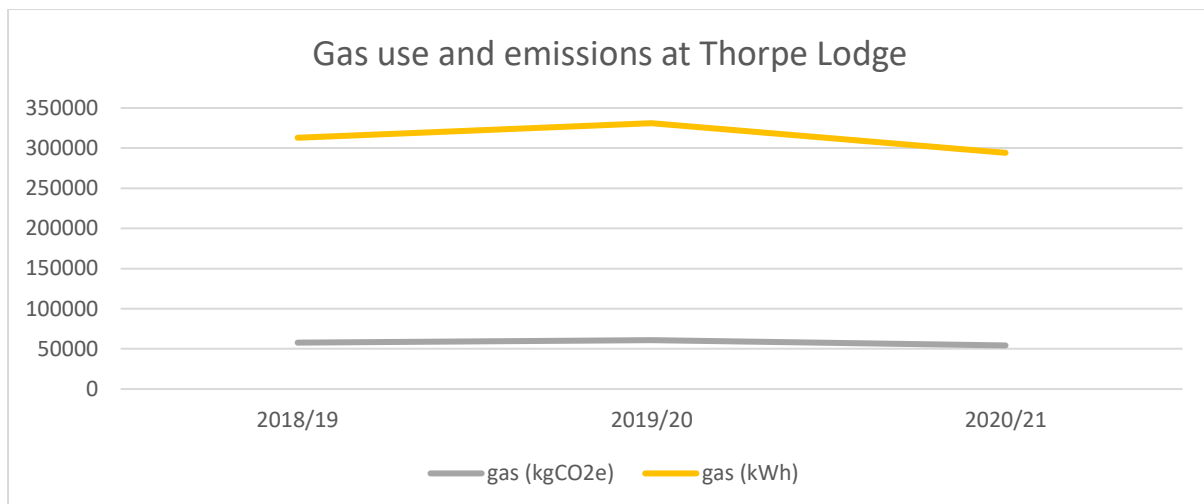


Figure 6 shows a small decrease in gas use and associated emissions from 2018/19 to 2020/21.

There has not been a large decrease in gas use that may have been associated with reduced office use caused by the pandemic. This is because the offices remained open for some staff, the whole office space had to be heated so that social distance could be maintained.

The reduction in gas use has been caused by a one hour reduction in heating times in the week, and no weekend heating unless the temperature drops below the lower outside limit. The temperatures have been reduced by 1 degree on each floor.

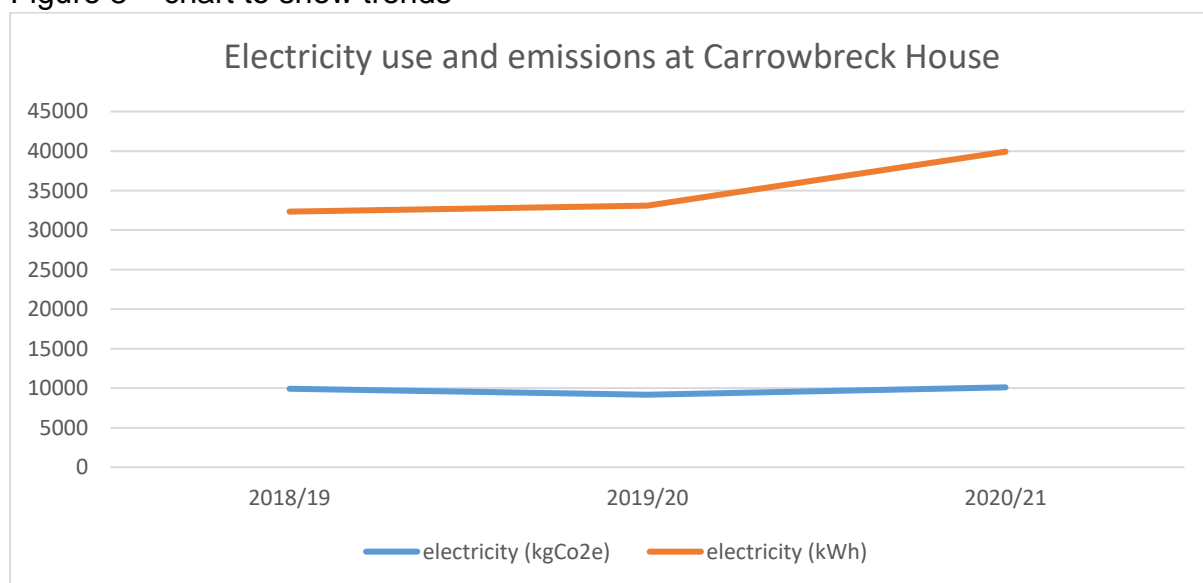
Carrowbreck House

Description of building

Table 6 – trends in emissions

	2018/19	2019/20	2020/21
Electricity	9.2	8.5	9.3
Electricity T & D	0.8	0.7	0.8

Figure 8 – chart to show trends



There has been an increase in electricity use at Carrowbreck House in 2020/21, at present this increase in electricity use cannot be explained. The building was used much less in 2020/21 due to the pandemic.

Transport related emissions

Waste and Street scene fleet

Emissions associated with the waste fleet are the largest emitter. The emissions have increased since last year and the baseline year. The increase in fuel use was a result of additional and expanding collection routes along with additional vehicles deployed to cover the age profile of the fleet.

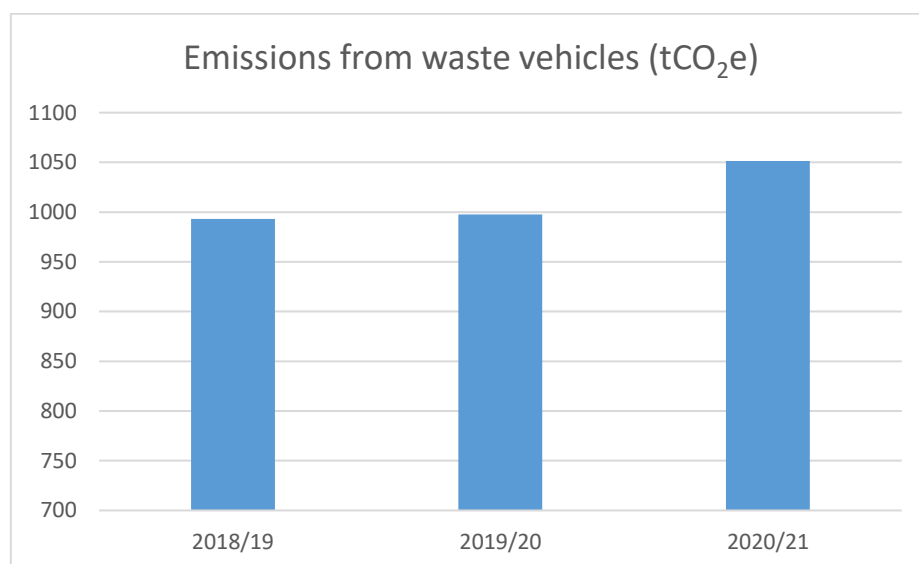


Figure 9 trends in emissions from waste vehicles

Staff travel

The emissions associated with staff and member business travel are 44.4tCO₂e. This is a decrease compared to last year and the baseline year (2018/19.) This is due to the impact of Covid, council staff and members were travelling less due to lockdown restrictions.

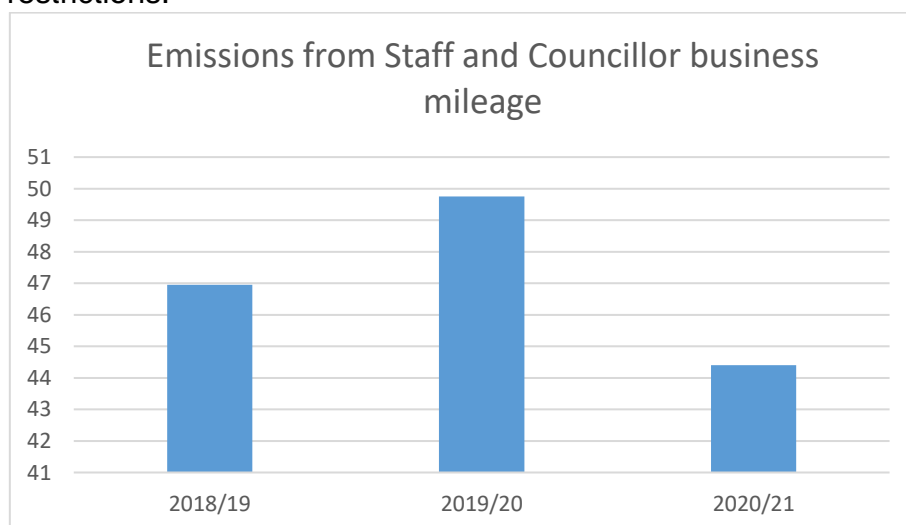


Figure 10 trends in emissions from staff and councillor business travel

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. There were considerably fewer councillor mileage claims in this period, so it was possible to check all of these records for fuel type. This mileage accounts for 44.4tCO₂e.

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 waste water 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 2020/21 there was an estimated 65% reduction in waste produced. This was due to the pandemic and lockdowns which significantly reduced the occupancy of the offices.

Appendix

Scope 1		2018/19	2019/20	2020/21
Building/Activity	fuel	emission s	emission s	emission s
Thorpe Lodge	gas	57.59	60.87	54.29
Owned vehicles	Diesel	1.94	1.81	2.14
Frettenham Depot	heating oil	6.09	4.82	7.62
Frettenham Depot	Biomass	1.27	0.51	0.87
TOTAL		66.88	68.01	64.92
Scope 2		2018/19	2019/20	2020/21
Building/Activity	fuel	emission s	emission s	emission s
Thorpe Lodge	electricity	104.30	94.89	72.80
Carrowbreck	electricity	9.16	8.46	9.31
Frettenham Depot	electricity	12.06	11.80	10.92
Streetlights	electricity	35.39	30.32	26.68
Ranworth toilets	electricity	0.29	0.11	0.03
Reedham toilets	electricity	0.06	0.08	0.04
TSA Toilets	electricity	0.42	0.38	0.00
Coltishall toilets	electricity	0.34	0.30	0.22
South Walsham toilets	electricity	1.54	1.41	1.04
Salhouse toilets	electricity	0.02	0.01	0.01
TOTAL		163.57	147.76	121.04
Scope 3		2018/19	2019/20	2020/21
Building/Activity	fuel	emission s	emission s	emission s
Staff&member busines travel	mileage	46.95	49.75	44.40
Thorpe Lodge	electricity T&D	8.89	8.06	6.26
Carrowbreck	electricity T&D	0.78	0.72	0.80
Frettenham Depot	electricity T&D	1.03	1.00	0.94
Streetlights	electricity T&D	3.02	2.57	2.29
Ranworth toilets	electricity T&D	0.02	0.01	0.00
Reedham toilets	electricity T&D	0.00	0.01	0.00
TSA Toilets	electricity T&D	0.04	0.03	0.00
Coltishall toilets	electricity T&D	0.03	0.03	0.02
South Walsham toilets	electricity T&D	0.13	0.12	0.09
Salhouse toilets	electricity T&D	0.00	0.00	0.00
Frettenham Depot	diesel	993.26	997.57	1051.26
Grounds maintenance (SNC depot)	diesel	8.66	8.05	8.04
Thorpe Lodge	waste - residual efw	5.39	5.38	1.88
Thorpe Lodge	waste dry recycling	0.02	0.02	0.02

Thorpe Lodge	waste food waste compost	0.47	0.47	0.08
Thorpe Lodge	electrical waste	0.00	0.00	0.00
Thorpe Lodge	sanitary waste	0.00	0.00	0.00
Carrowbreck	waste - residual efw	0.61	0.61	0.21
Ranworth toilets	water	0.21	0.21	0.19
Reedham toilets	water	0.00	0.00	0.02
TSA Toilets	water	0.01	0.01	0.00
Coltishall toilets	water	0.01	0.01	0.04
South Walsham toilets	water	0.00	0.00	0.00
Salhouse toilets	water	0.13	0.13	0.04
Ranworth toilets	sewage	0.38	0.38	0.35
Reedham toilets	sewage	0.00	0.00	0.29
TSA Toilets	sewage	0.03	0.03	0.00
Coltishall toilets	sewage	0.02	0.02	0.07
South Walsham toilets	sewage	0.00	0.00	0.00
Salhouse toilets	sewage	0.19	0.19	0.07
TOTAL		1070.30	1075.38	1117.36
1,2,3	TOTAL	1300.75	1291.15	1303.32