

Broadland District Council Carbon Footprint report for 2019/20



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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 2019 carbon conversion factors.

Broadland District Council
Thorpe Lodge, Yarmouth Road, Norwich, NR7 0DU
1st April 2019 to 31 st March 2020

In January 2020 Broadland District Council staff joined with South Norfolk Council staff to form the One Team. This period forms one quarter of the report timeframe. There weren't any significant changes in this period that had an impact on the carbon footprint.

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	Oil Deliveries
	Diesel in owned vehicles	Energy van Handyperson van	DVLA record Estimated annual mileage
	Biomass wood pellet	Frettenham Depot	Wood Pellet 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	Public toilets	Bills
	Diesel	Grounds Maintenance (operated from SNC depot)	Litres fuel recorded (33% of total)

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 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 council or the waste contractor (Veolia) have been included – where the council pays the energy bills.

Buildings that are owned by the council but operated by an organisation not providing a council service are not included.

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 2019/20 has been calculated as 1291.15 tCO₂e, the breakdown is shown in table 1

Table 2: Emissions by scope and activity

	2019/20	tCO ₂ e
Scope 1	Natural Gas	60.87
	Heating Oil	4.82
	Biomass	0.51
	Authority owned vehicles	1.81
Scope 2	Electricity	147.76
Scope 3	Employee & Councillor business travel	49.75
	Transmission and Distribution losses from Electricity consumption	12.54
	Waste Disposal (from Council operated buildings)	6.48
	Water Use	0.99
	Diesel Use (Veolia Waste Fleet)	997.6
	Diesel Use – grounds maintenance provided by SNC depot	8.04
Total all scopes		1291.15 (0.7% decrease from 2018/19)

Intensity Measurement

In 2019 the population of Broadland was 130,783. 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	1291.15	130,783	9.87
South Norfolk	2,740.57	140,880	19.45
Norwich	4,031	140,573	28.67
Breckland	5,084	139,968	36.32
Kings Lynn and West Norfolk	4,457	151,383	29.44

Breakdown of Emissions

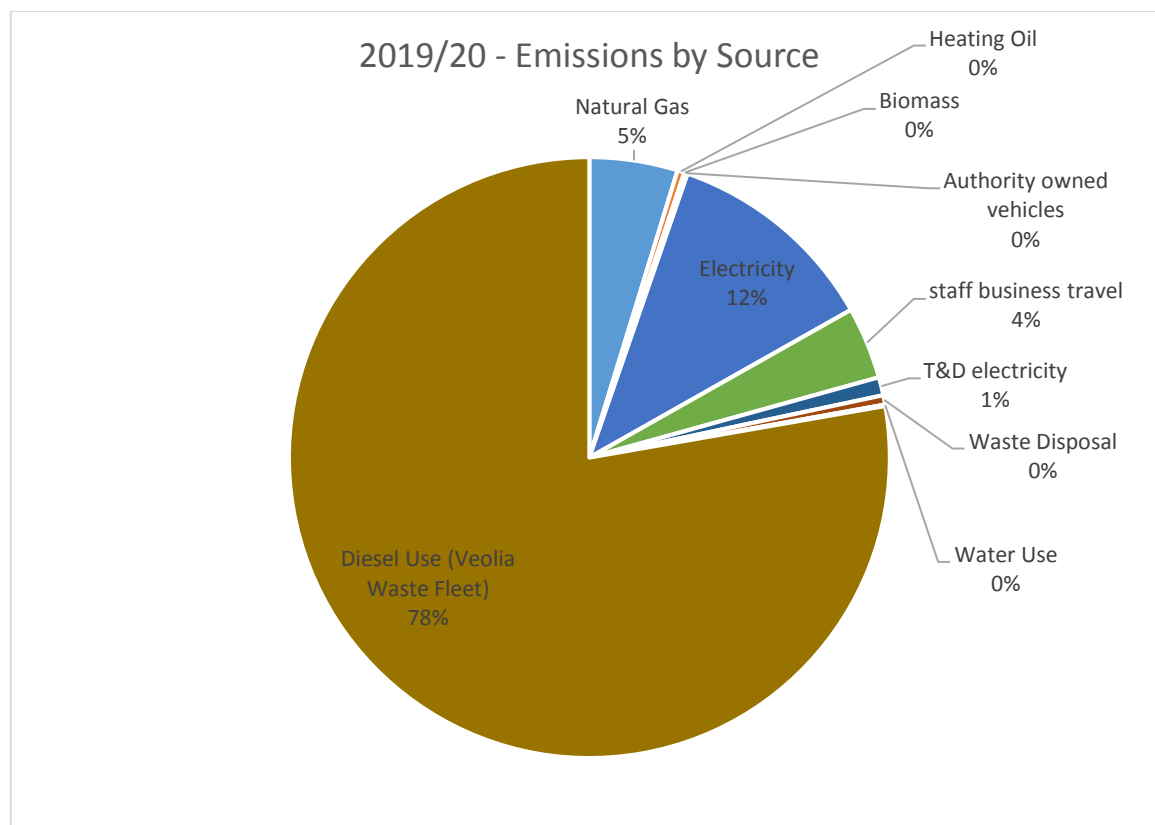


Figure 1: Emissions by source

Figure 1 shows the breakdown of emissions by source. The diesel used by the waste fleet operated by Veolia forms 78% of emissions, this is followed by electricity used in buildings (12%), natural gas use (5%) and staff and member business travel (4%). All the other emissions sources make up 1% or less of total emissions.

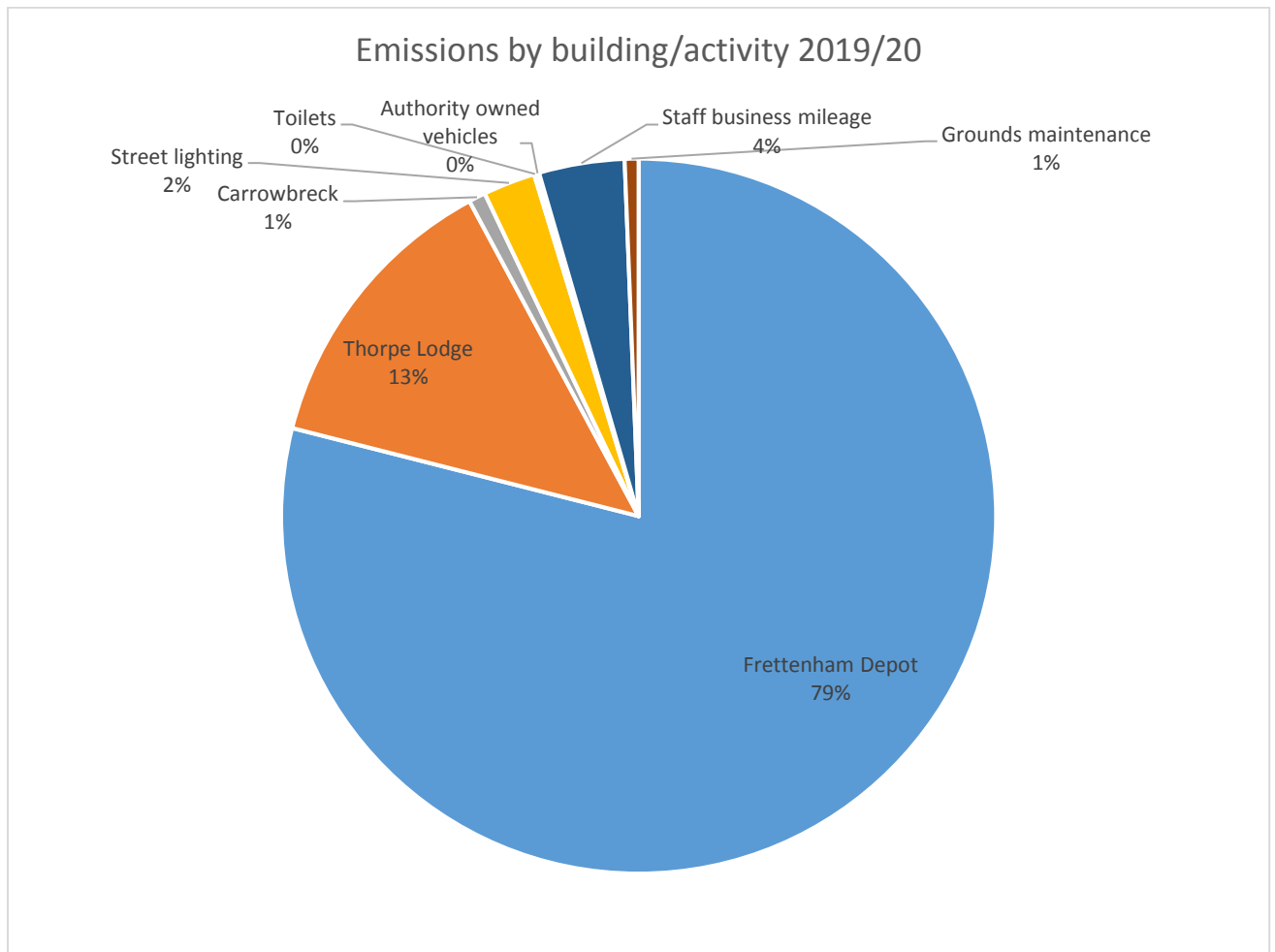


Figure 2: Emissions by Building or Activity

Figure 2 shows the building or activity that the emissions are produced by. Frettenham Depot is the largest with 79% this includes energy use in the building and the diesel used by the refuse vehicles, Thorpe Lodge is second largest with 13% of emissions, followed by staff and member business mileage at 4%, Street lighting 2%, all of the remaining activities make up less than 1% of emissions each.

Emissions Trends

Table 4 shows the changes in emissions over time.

	2018/19	2019/20
Scope 1	66.88*	68.01
Scope 2	163.57* ²	147.76
Scope 3	1070.3*	1075.38
Total gross emissions	1300.75	1291.15
Offsets	0	0
Green tariff	0	0
Total annual net emissions	1300.75	1291.15
Outside of scopes	n/a	n/a

*This has been updated since published baseline report as grounds maintenance diesel has been moved to scope 3.

*² This has been updated since published baseline report as additional data on owned toilets has been added in.

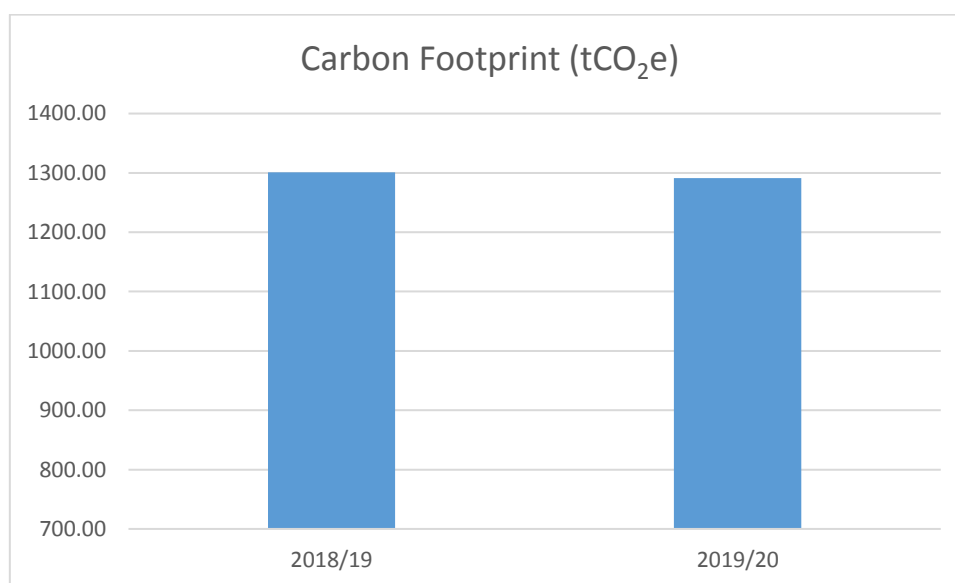


Figure 3: Total emissions by year

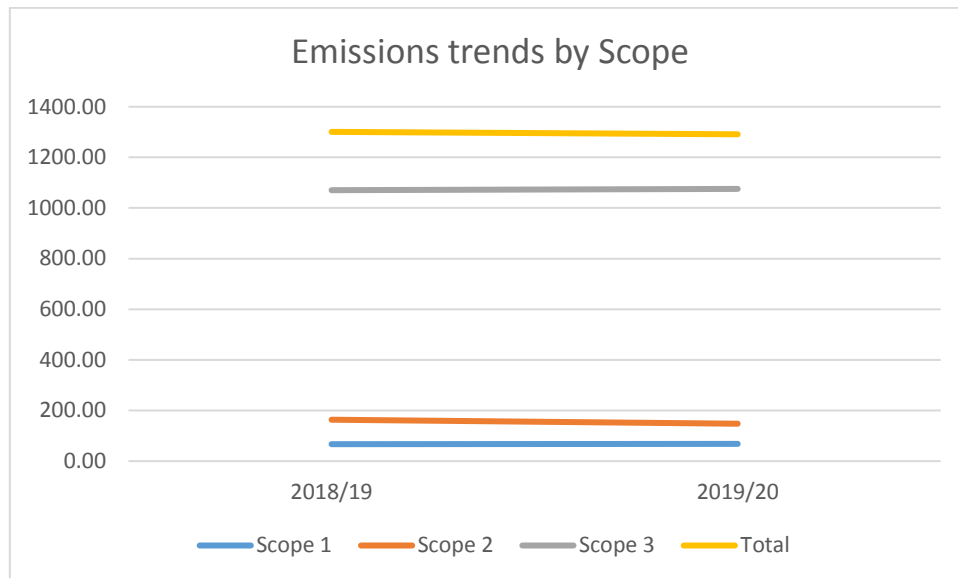


Figure 4 Emissions trends by scope

Figure 4 shows that there has been very little change in any scope since 2018/19.

Energy Use in Buildings

Electricity and gas usage has been provided from meter readings and bills.

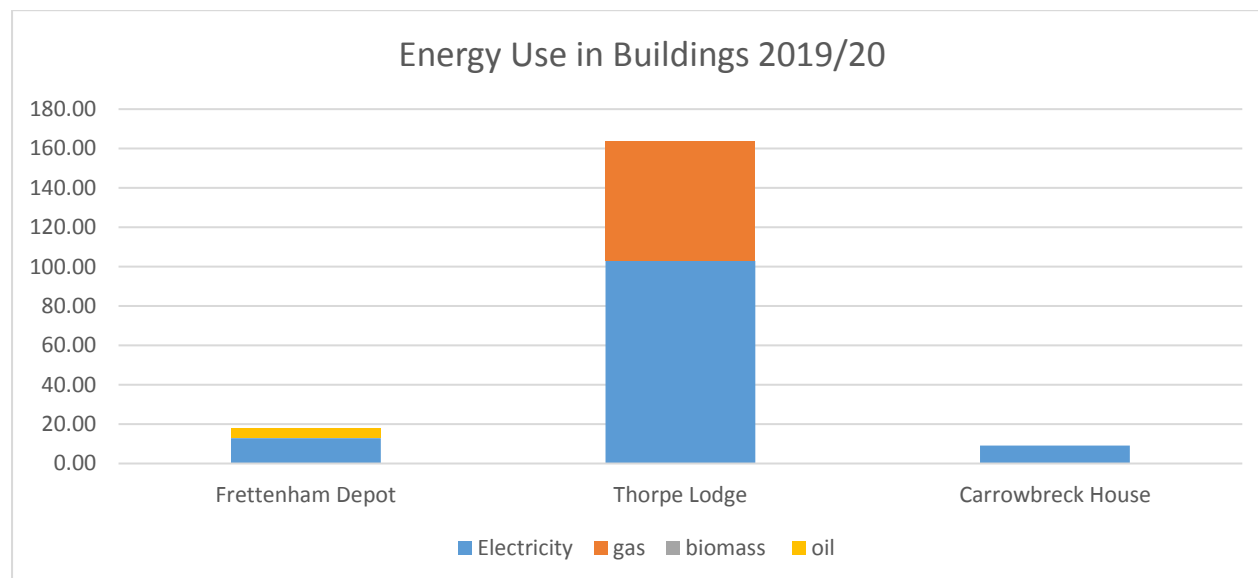


Figure 5: Energy use by building

Thorpe Lodge

Thorpe Lodge is the main office building for Broadland Council, during 2019/20 it was fully occupied.

Table 5 – trends in emissions in tCO₂e

	2018/19	2019/20
Electricity	104.3	94.9
Electricity T & D	8.9	8.1
Gas	57.6	60.9
Waste	5.88	5.87
Total	176.7	169.8

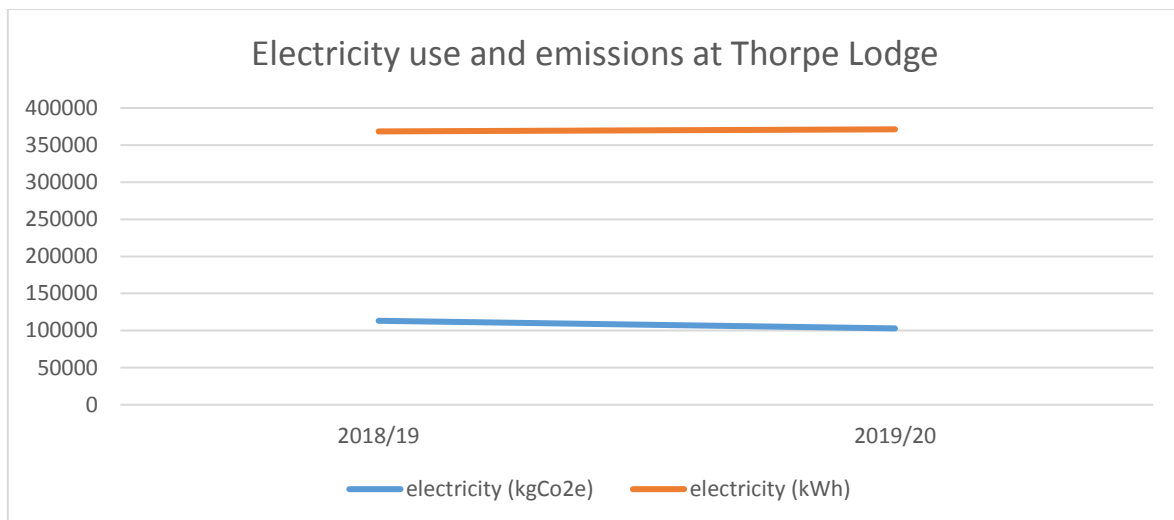


Figure 6 electricity use and emissions at Thorpe Lodge

Figure 6 shows that although the kWh of electricity used has increased very slightly since the baseline year, the decarbonisation of the grid means that emissions have reduced.

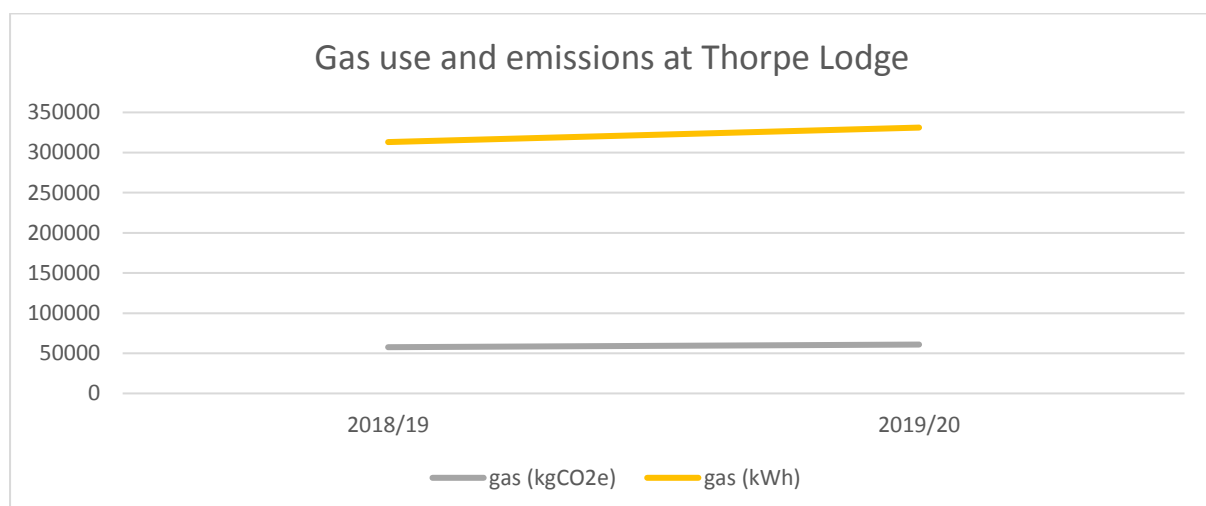


Figure 7 gas use and emissions at Thorpe Lodge

Figure 7 shows that there has been an increase in gas use at Thorpe Lodge from 2018-19 to 2019-20.

Although when this is calculated using degree days to weather adjust the emissions there was a 2% decrease in energy use. This means that 2019-20 had more colder days than 2018-19, therefore more gas was needed to maintain the same internal temperature. These weather adjusted emissions are useful to give context to figures but cannot be used in the final carbon footprint.

The heating timings and temperatures have been reduced which has reduced the gas required to heat the building, this is consistent with the weather adjusted emissions.

Carrowbreck House

Carrowbreck House is Broadland's training centre.

Table 6– trends in emissions

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

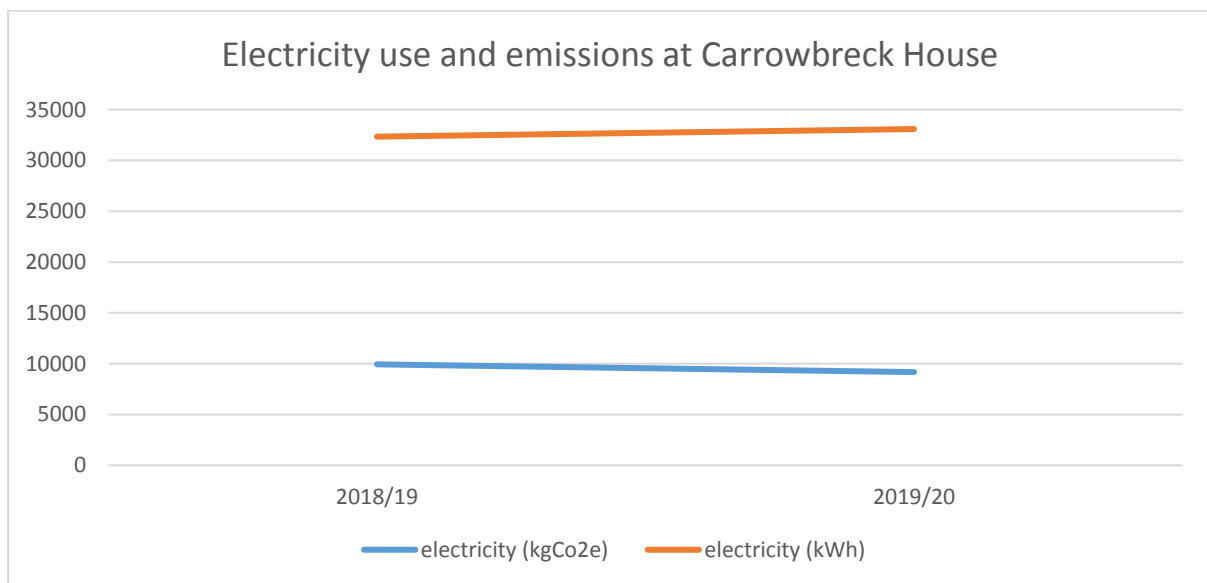


Figure 8 electricity use and emissions at Carrowbreck House

Figure 8 shows very similar electricity use from 2018-19 to 2019-20, the decarbonisation of the grid has led to a small reduction in associated emissions.

Transport related emissions

Waste and Street scene fleet

Emissions associated with the waste fleet are the largest emitter, 997.6 tCO₂e. The emissions have increased slightly since the baseline year (993.3 tCO₂e). This is because more miles were travelled in 2019/20 compared to 2018/19.

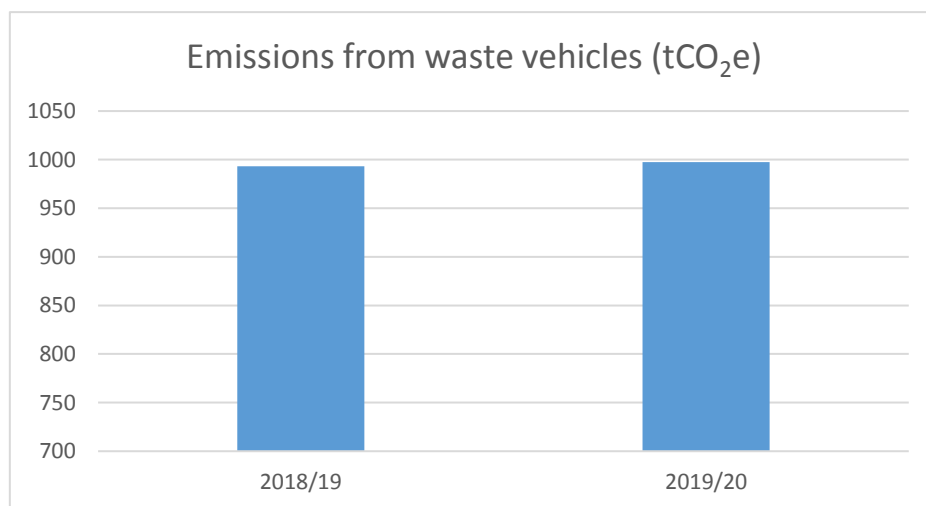


Figure 9 trends in emissions from waste vehicles

Staff travel

The emissions associated with staff and member business travel are 49.75tCO₂e. This is a 6% increase compared to the baseline year (46.9 tCO₂e). This is because more miles were claimed for.

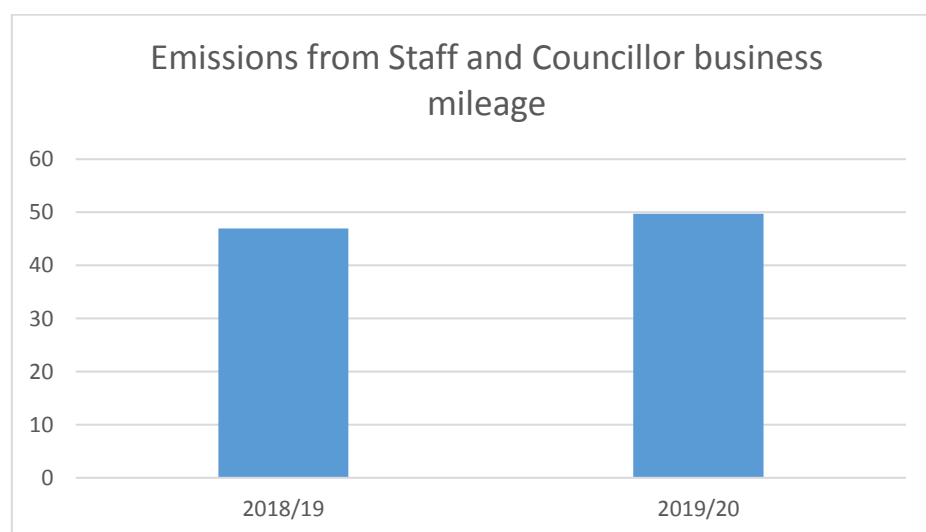


Figure 10 trends in emissions from staff and councillor business travel

The data for 2019/20 has been partially estimated. Due to a change in the recording system only data for April – September 2019 was available, so this 6-month period has been doubled to create an estimate for a whole year.

The mileage claimed by staff is split into diesel and petrol claims, the average car for each fuel type has been used to calculate emissions.

For the councillor mileage claims no fuel type is recorded so these have been calculated using the average car unknown fuel conversion factor.

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 the council owned buildings indicates that there a 3 main streams: recycling, food waste and residual, with the residual waste going to incineration (energy from waste)

The government conversion factors for recycling 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

Appendix

Scope 1		2018/19	2019/20
Building/Activity	fuel	emissions	emissions
Thorpe Lodge	gas	57.59	60.87
Owned vehicles	Diesel	1.94	1.81
Frettenham Depot	heating oil	6.09	4.82
Frettenham Depot	Biomass	1.27	0.51
TOTAL		66.88	68.01
Scope 2		2018/19	2019/20
Building/Activity	fuel	emissions	emissions
Thorpe Lodge	electricity	104.30	94.89
Carrowbreck	electricity	9.16	8.46
Frettenham Depot	electricity	12.06	11.80
Streetlights	electricity	35.39	30.32
Ranworth toilets	electricity	0.29	0.11
Reedham toilets	electricity	0.06	0.08
TSA Toilets	electricity	0.42	0.38
Coltishall toilets	electricity	0.34	0.30
South Walsham toilets	electricity	1.54	1.41
Salhouse toilets	electricity	0.02	0.01
TOTAL		163.57	147.76
Scope 3		2018/19	2019/20
Building/Activity	fuel	emissions	emissions
Staff&member busines travel	mileage	46.95	49.75
Thorpe Lodge	electricity T&D	8.89	8.06
Carrowbreck	electricity T&D	0.78	0.72
Frettenham Depot	electricity T&D	1.03	1.00
Streetlights	electricity T&D	3.02	2.57
Ranworth toilets	electricity T&D	0.02	0.01
Reedham toilets	electricity T&D	0.00	0.01
TSA Toilets	electricity T&D	0.04	0.03
Coltishall toilets	electricity T&D	0.03	0.03
South Walsham toilets	electricity T&D	0.13	0.12
Salhouse toilets	electricity T&D	0.00	0.00
Frettenham Depot	diesel	993.26	997.57
Grounds maintenance (SNC depot)	diesel	8.66	8.05
Thorpe Lodge	waste - residual efw	5.39	5.38
Thorpe Lodge	waste dry recycling	0.02	0.02
Thorpe Lodge	waste food waste compost	0.47	0.47
Thorpe Lodge	electrical waste	0.00	0.00

Thorpe Lodge	sanitary waste	0.00	0.00
Carrowbreck	waste - residual efw	0.61	0.61
Ranworth toilets	water	0.21	0.21
Reedham toilets	water	0.00	0.00
TSA Toilets	water	0.01	0.01
Coltishall toilets	water	0.01	0.01
South Walsham toilets	water	0.00	0.00
Salhouse toilets	water	0.13	0.13
Ranworth toilets	sewage	0.38	0.38
Reedham toilets	sewage	0.00	0.00
TSA Toilets	sewage	0.03	0.03
Coltishall toilets	sewage	0.02	0.02
South Walsham toilets	sewage	0.00	0.00
Salhouse toilets	sewage	0.19	0.19
TOTAL		1,070.30	1,075.38
All Scopes	TOTAL	1,300.75	1,291.15