South Norfolk 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 (CO_2e), calculated using the UK Government's 2020 carbon conversion factors.

South Norfolk Council
South Norfolk House Cygnet Court, Long Stratton NR15 2XE
1st April 2020 to 31st March 2021

Throughout the period of this report staff from South Norfolk Council and Broadland Council were operating as one team. From March 2020 COVID restrictions were in place, and these had a significant impact on some of the council's services. The main office remained open, though many staff worked from home. The waste fleet operated a full service throughout.
The leisure centres were closed from 17th March to 25th July 2020. Once they reopened there were social distancing and capacity restrictions in place. They then closed again for 4 weeks in November reopening on 3rd December. Closed again on 24th December until 12th April 2021.

Scopes and Inclusions

Table 1 - Data sources of energy use

Scope	Fuel/Activity	Location	Data Source
Scope 1	Main Gas	Wymondham Leisure Centre	Bills/meter reads
		Diss Leisure Centre	Bills/meter reads
		Temporary Accommodation 1	Bills/meter reads
	Heating oil	South Norfolk House	Oil Deliveries
		Ketteringham Depot	Oil Deliveries
	Diesel in owned vehicles	Waste and street scene Fleet	Diesel used – fuel pump data
		Grounds Maintenance Ketteringham	Diesel used – fuel pump data
Scope 2	Electricity	South Norfolk House	Bills/meter reads
	Electricity	Wymondham Leisure Centre	Bills/meter reads
	Electricity	Diss Leisure Centre	Bills/meter reads
	Electricity	Long Stratton Leisure Centre	Bills/meter reads
	Electricity	Ketteringham Depot	Bills/meter reads
	Electricity	Diss Mere toilets	Bills/meter reads
	Electricity	Wymondham Market Place toilets	Bills/meter reads
	Electricity	Hingham Market Place toilets	Bills/meter reads
	Electricity	Long Stratton toilets	Bills/meter reads
	Electricity	Church Plain Loddon toilets	Bills/meter reads
	Electricity	Harleston toilets	Bills/meter reads
	Electricity	Wymondham Ticket Machine	Bills/meter reads
	Electricity	Diss Ticket Machine	Bills/meter reads
	Electricity	Temporary Accommodation 2	Bills/meter reads
	Electricity	Temporary Accommodation 3	Bills/meter reads
	Electricity	Temporary Accommodation 5	Bills/meter reads
	Electricity	Temporary Accommodation 1	Bills/meter reads
	Electricity	Temporary Accommodation 4	Bills/meter reads
	Electricity	Streetlights	Bills/meter reads
Scope 3	Mileage	Staff and councillor business travel	From mileage claims

		Loddon Business Centre	Bills/meter reads
	Electricity	Old Barn Annexe, Diss	Bills/meter reads
	Electricity	Loddon BC	Bills/meter reads
	Electricity	Diss Business Centre	Bills/meter reads
	Electricity	Crafton House	Bills/meter reads
	Electricity	Trumpeter House	Bills/meter reads
	Electricity Transmission and Distribution	South Norfolk House, Leisure Centres, Public Toilets, Business Centres, streetlights	Bills/ meter reads
	Waste disposal in council buildings	South Norfolk House	Waste notices and estimates of volume and frequency of bin emptying
	Waste disposal in council buildings	Long Stratton Leisure Centre	Waste notices and estimates of volume and frequency of bin emptying
	Waste disposal in council buildings	Diss Leisure Centre	Waste notices and estimates of volume and frequency of bin emptying
	Waste disposal in council buildings	Wymondham Leisure Centre	Waste notices and estimates of volume and frequency of bin emptying
	Water use	South Norfolk House	Bills
	Water use	Public toilets	Bills
	Water use	Ketteringham Depot	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 report these cover emissions associated with business travel by employees and 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 South Norfolk the waste fleet is operated in house, so the emissions associated with this fall into scope 1. Water use and waste disposal from owned buildings is also included in scope 3.

The business centres are included in scope 3, as they are owned by the council but rented to tenants.

Inclusions
Buildings that are owned and operated by the council 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, the exception being the Business Centres.

Example calculation method

Electricity use (kWh) x conversion factor associated with grid electricity = emissions kgCO_2e

GHG Emissions Statement

South Norfolk Council's Carbon Footprint for 2019/20 has been calculated as 1291.15 tCO_2e, the breakdown is shown in table 2.

Table 2: Emissions by activity

2020/21	**tCO_2e**
Natural Gas	210.46
Heating Oil	187.23
Diesel owned vehicles (Ketteringham Depot)	1238.55
Electricity	362.22
Employee & Councillor business travel	53.77
Transmission and Distribution losses from electricity consumption	31.15
Waste Disposal (from Council operated buildings)	9.20
Water Use	4.11
Total all scopes	**2096.69**

Intensity Measurement

In 2020 the population of South Norfolk was 143,066. 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 3 shows a comparison with other councils in Norfolk

Council	GHG emissions (tCO_2e)	Population	Intensity ration ($kgCO_2e$ per resident)
South Norfolk	2096.69	143,066	14.65
Broadland	1303	131,931	9.87
Norwich	3078	142,177	21.64
Breckland	No 2020/21 report	141,255	-
Kings Lynn and West Norfolk	2997	151,245	19.80

Breakdown of Emissions

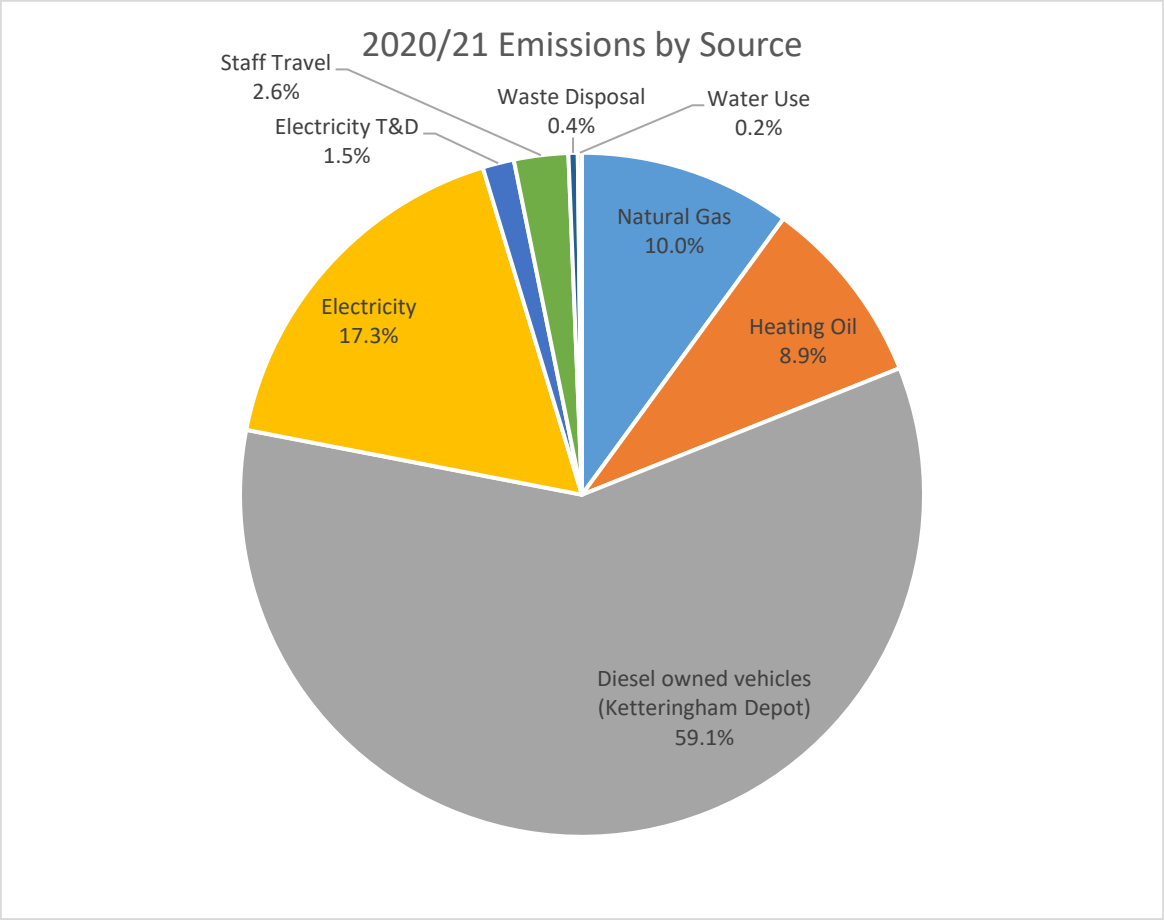

Figure 1: Emissions by source

Figure 1 shows the breakdown of emissions by source. Diesel used by the waste fleet makes up 59% of emissions, this is followed by electricity (17%) and natural gas (10%). Heating Oil (9%) and staff and member business travel (3%) make up the remaining significant contributions, with all other emissions sources contributing less than 1% of total emissions.

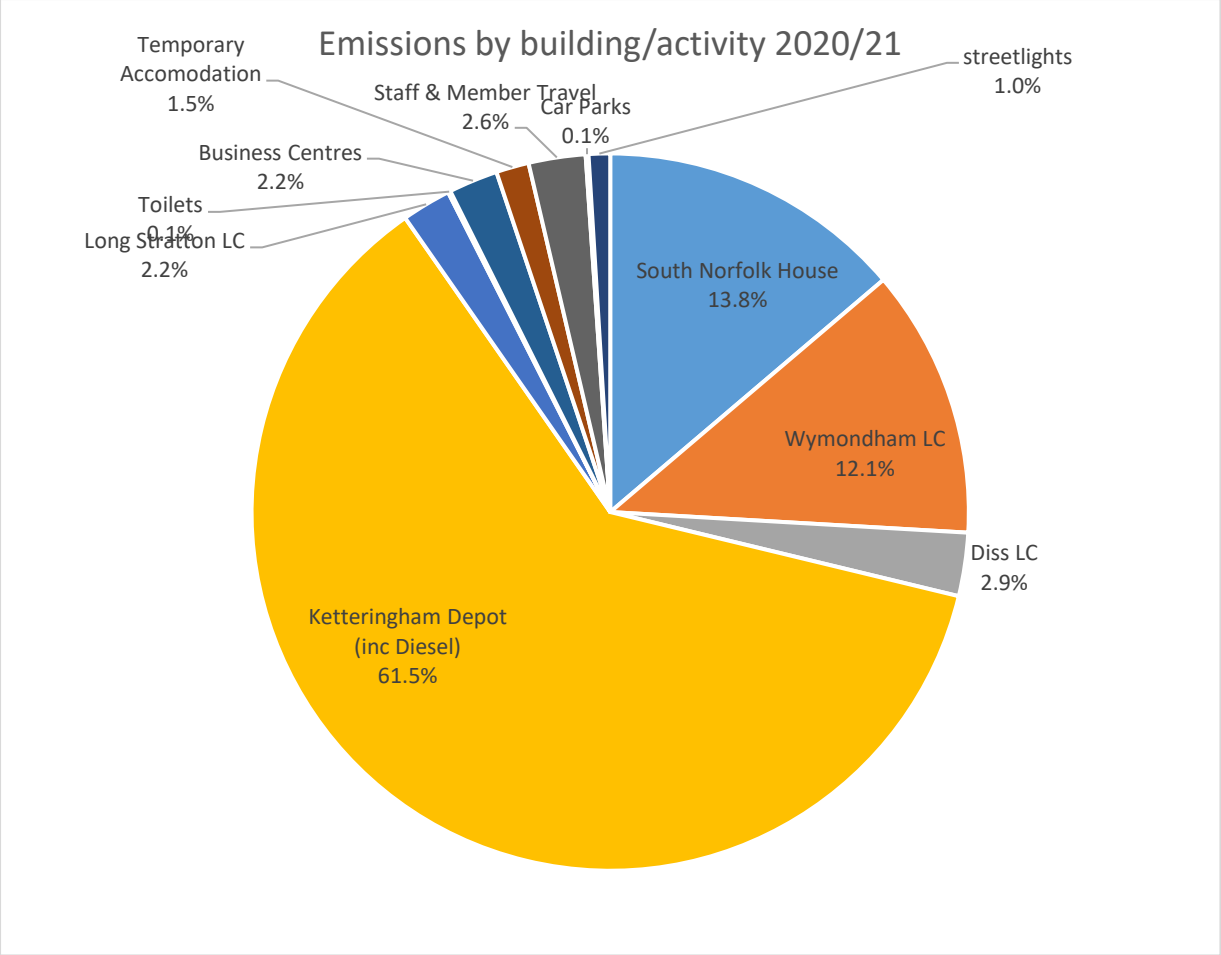

Figure 2: Emissions by Building or Activity

Figure 2 shows the building or activity that the emissions are produced by. Ketteringham Depot is the largest with 62% this includes energy use in the building and the diesel used by the refuse vehicles, South Norfolk House is second largest with 14% of emissions, followed by Wymondham Leisure Centre (12%) and Diss Leisure Centre (3%). Long Stratton Leisure Centre (2%) and the combined Business Centres (2%) and temporary accommodation units (2%) make up the remaining emissions. The public toilets have a negligible contribution to the total emissions.

Emissions Trends

Table 4 shows the changes in emissions over time.

	2018/19	**2019/20**	**2020/21**
Scope 1	2299.38	2101.09	1630.64
Scope 2	481.31	427.07	324.53
Scope 3	183.02	212.65	141.77
Total gross emissions	2963.71	2740.81	2096.93
Offsets	0	0	0
Green tariff	0	0	0
Total annual net emissions	**2963.71**	**2740.81**	**2096.69**
Outside of scopes	n/a	n/a	n/a

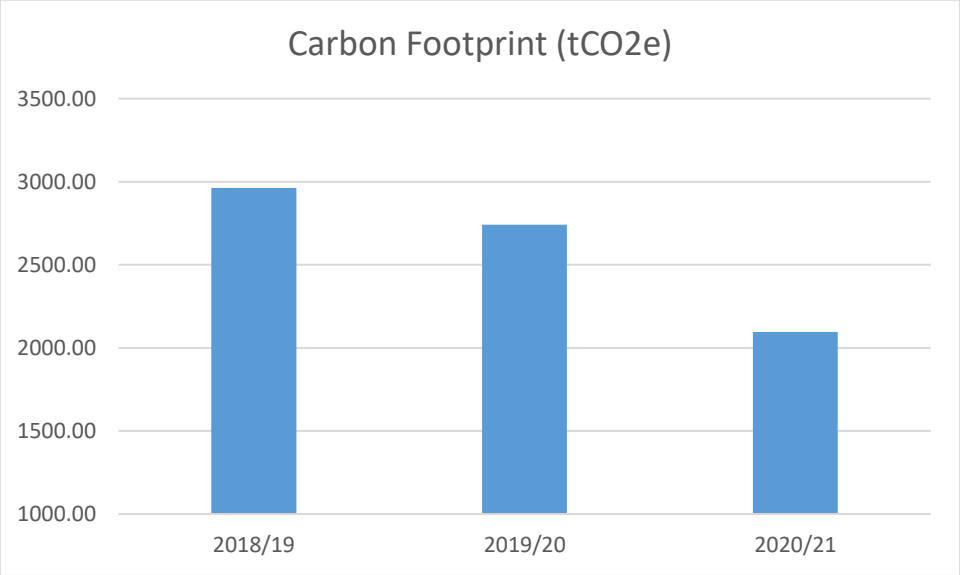

Figure 3: Emission totals by year

Table 4 and Figure 3 above show a reduction in overall emissions when compared to the previous year and baseline year.

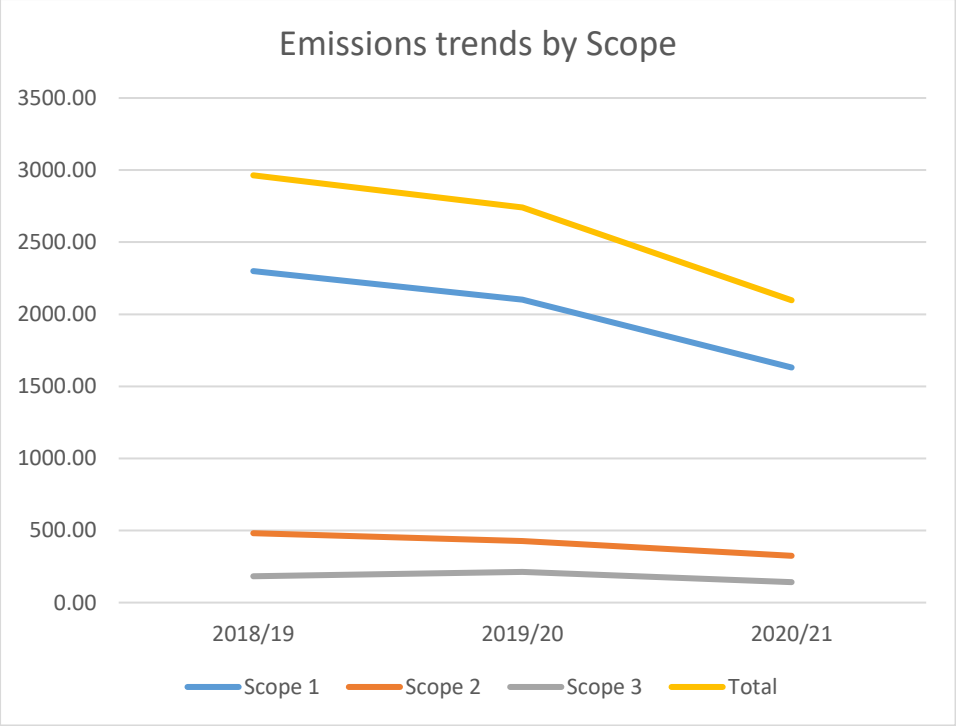

Figure 4 Emissions trends by scope

Figure 4 shows that there has been decrease in the total emissions and all scopes since the baseline year of 2018/19.

Energy Use in Buildings

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

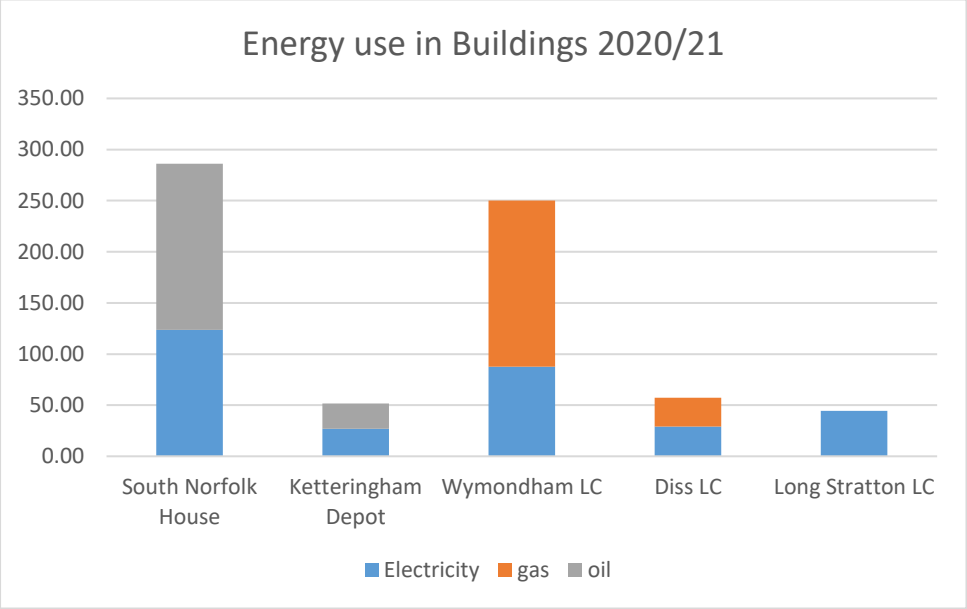

Figure 5: Energy use by building

South Norfolk House

South Norfolk House is the main office building for South Norfolk Council, during 2020/21 it was open throughout but it was not fully occupied as many staff members were working from home.

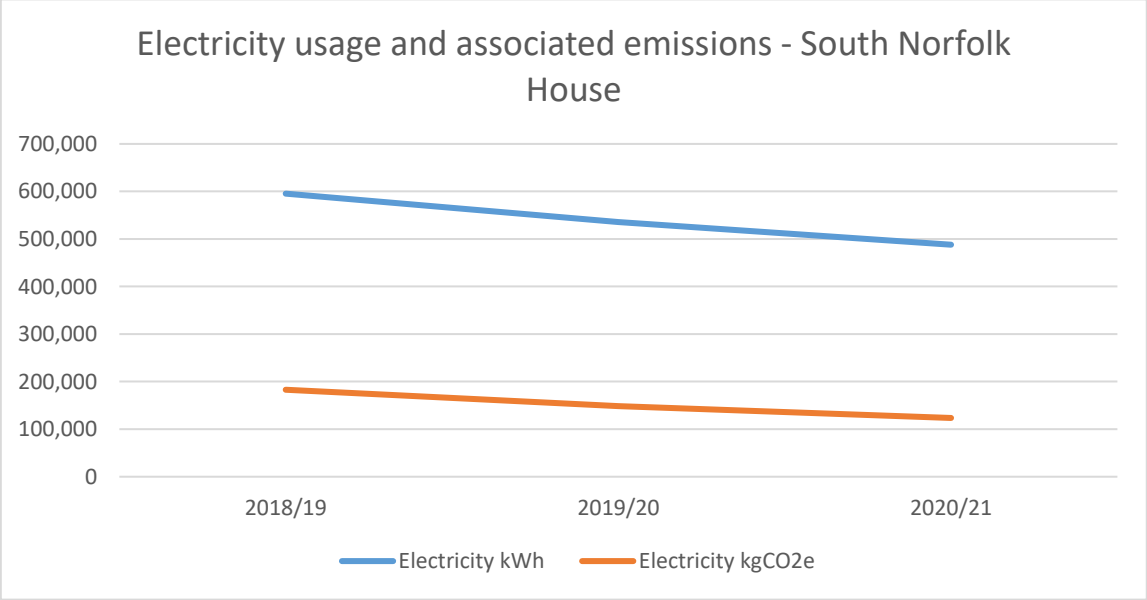

Figure 6 electricity use and emissions at South Norfolk House

Figure 6 shows a reduction in electricity use, which when combined with the decarbonisation of the grid results in reduced emissions.

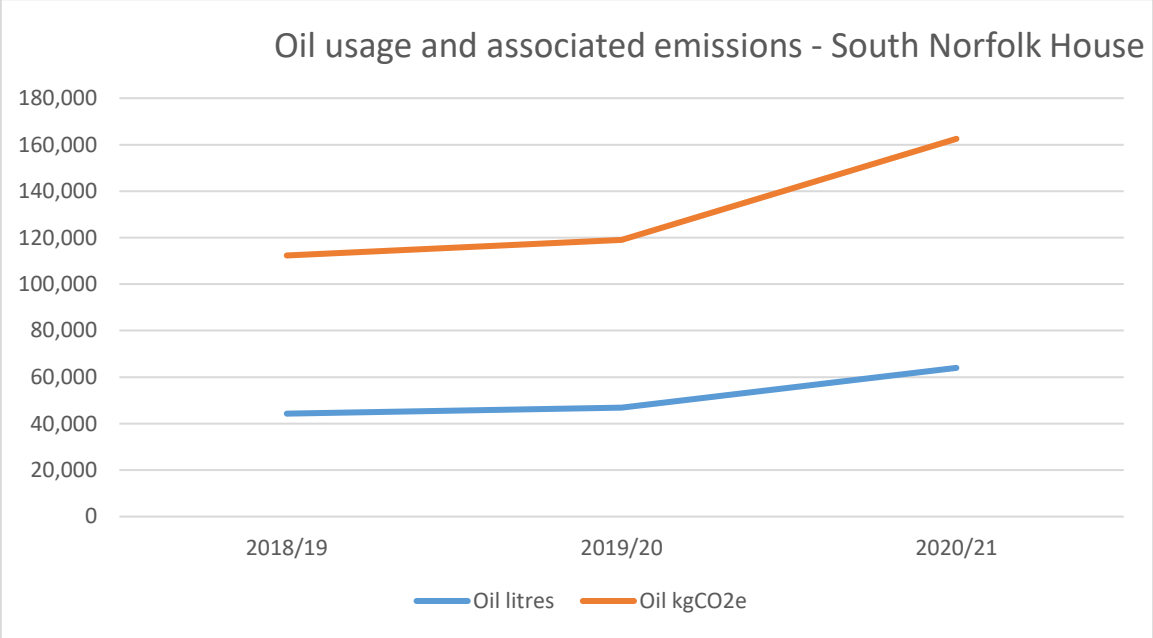

Figure 7 Oil use and emissions at South Norfolk House

Figure 7 shows that there has been a 36% increase in emissions from heating oil use at South Norfolk House from 2019-20 to 2020-21. When this is calculated using degree days (to weather adjust the emissions) there was still an 18% increase in energy use. This means that 2020-21 had more colder days than 2018-19, therefore more oil was needed to maintain the same internal temperature. The colder weather can only explain half of the increase in emissions from heating, the remaining increase is thought to come from more heating needed to heat the largely empty offices to a comfortable temperature. These weather adjusted emissions are useful to give context to figures but cannot be used in the final carbon footprint.

Wymondham Leisure Centre

Wymondham Leisure Centre has a pool, a fitness studio, a spa and sports courts. This is the largest leisure centre and was refurbished recently. There is a CHP system onsite.

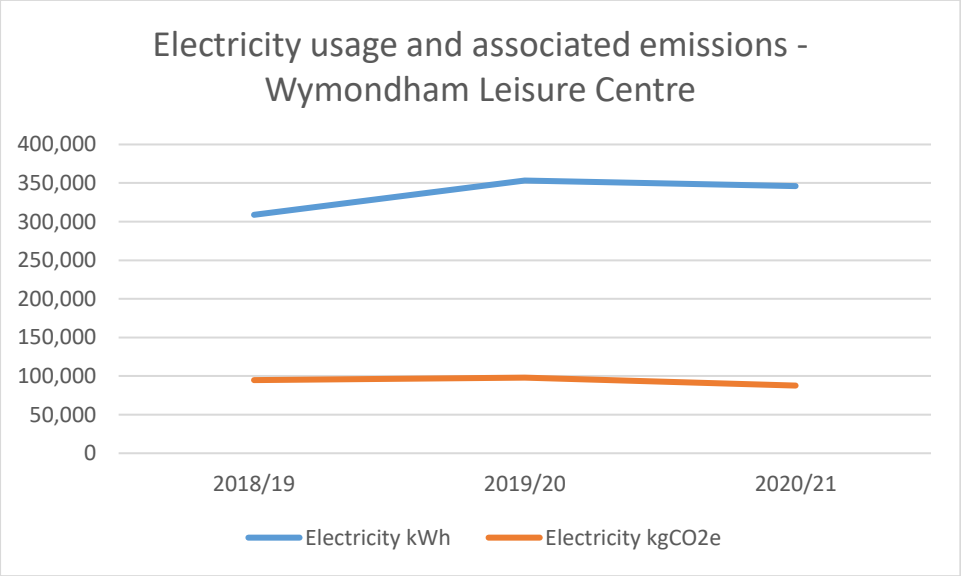

Figure 8 Electricity use and emissions at Wymondham Leisure Centre

Figure 8 shows increase in electricity use from 2018-19 to 2019-20, and a small reduction from 2019-20 to 2020-21 however the decarbonisation of the grid has led to a small reduction in associated emissions.

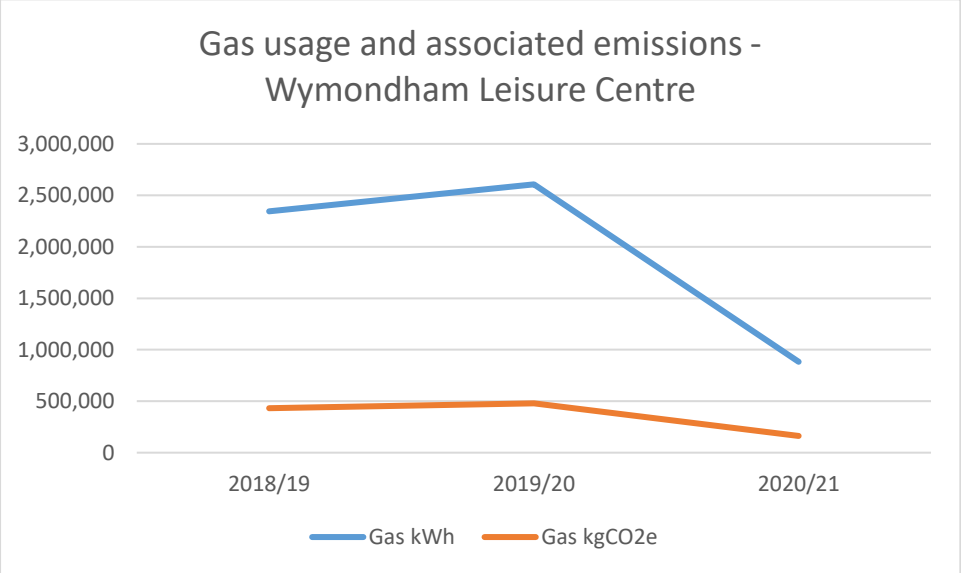

Figure 9 Gas use and emissions at Wymondham Leisure Centre

Figure 9 shows a significant reduction in gas use, this is because the leisure centre was closed in the lockdown periods. Gas is used to heat the pool via the combined heat and power (CHP) system on site.

Long Stratton Leisure Centre

Long Stratton Leisure Centre has a gym, fitness studio, soft play area and 3G pitch. This building was refurbished recently, and the heating was changed from oil to an air source heat pump.

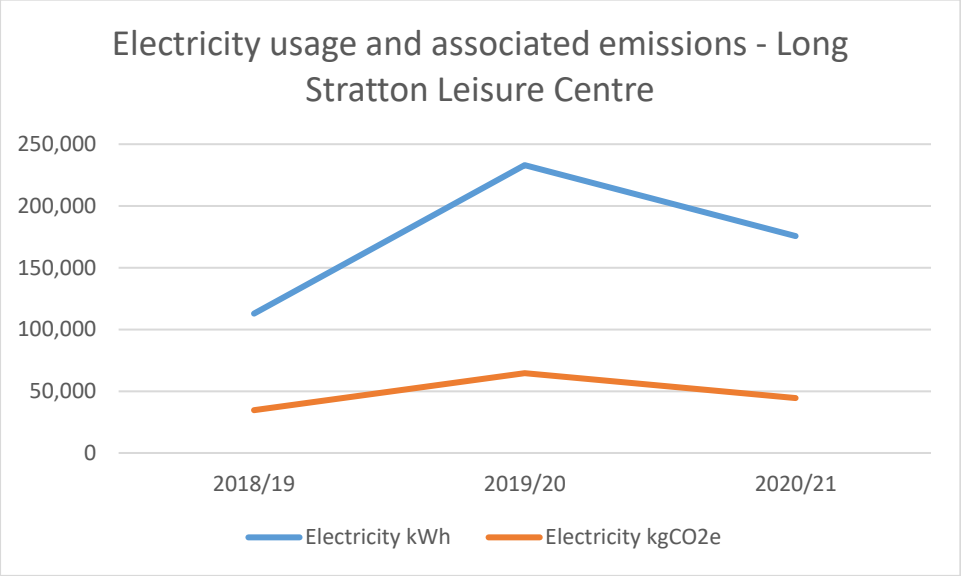

Figure 10 Electricity use and emissions at Long Stratton Leisure

Figure 10 shows a large increase in electricity use between 2018-19 and 2019-20 and then a decrease to 2020-21. The decrease is due to leisure centre closures in the lockdowns.

Diss Leisure Centre

Diss Leisure Centre has a pool, gym and sauna. This is an older leisure centre

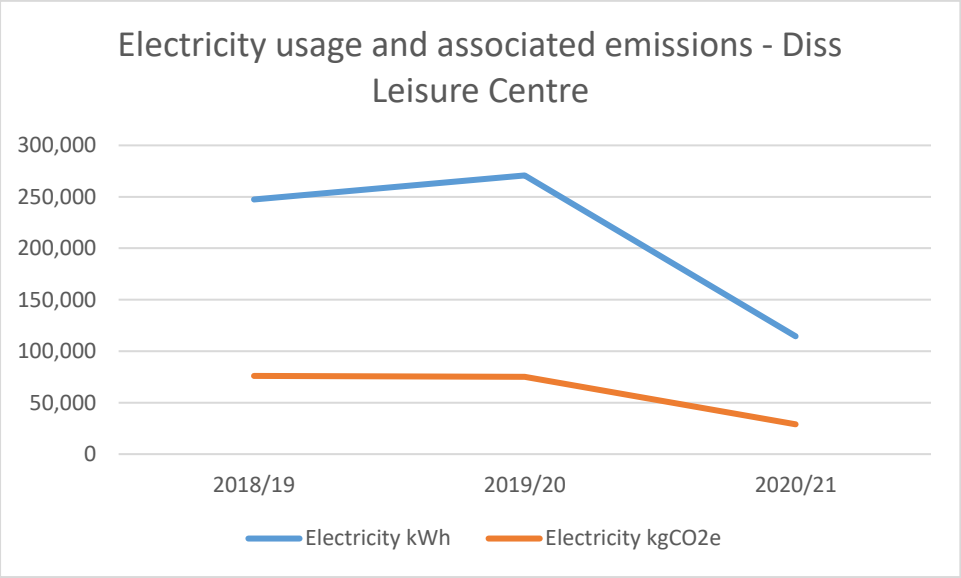

Figure 11 Electricity use and emissions in tCO_2e

Figure 11 shows an increase in electricity use between 2018-19 and 2019-20, then there has been a significant decrease to 2020-21, this was due to leisure centre closures in the lockdowns.

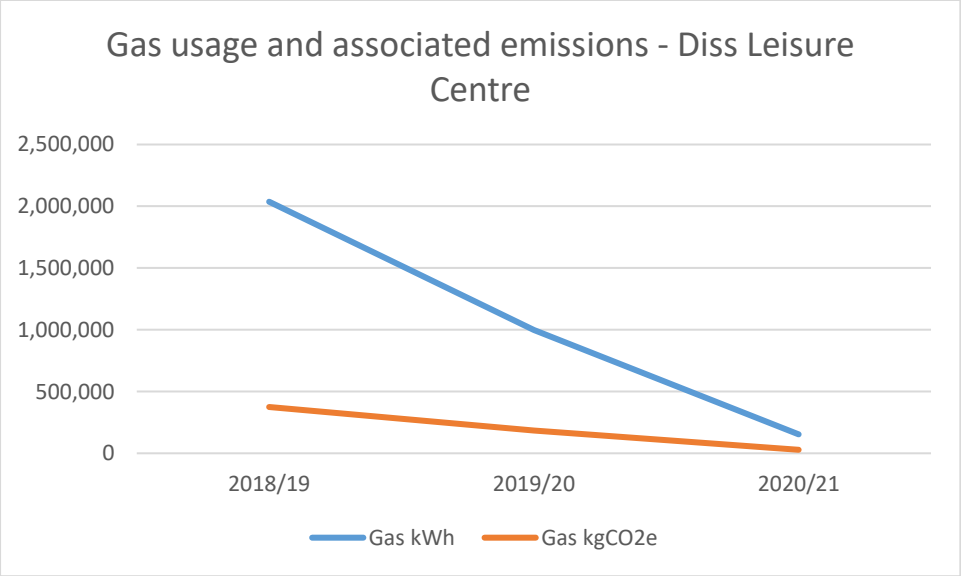

Figure 12 Gas use and emissions at Diss Leisure Centre.

Figure 12 shows a significant reduction in gas use between 2018-19 and 2020-21. This largely due to efficiency savings brought about due to a new gas pipe and equipment fitted in 2019/20 and closures during the lockdowns

Ketteringham Depot

Ketteringham Depot is the base for the waste and grounds maintenance service.

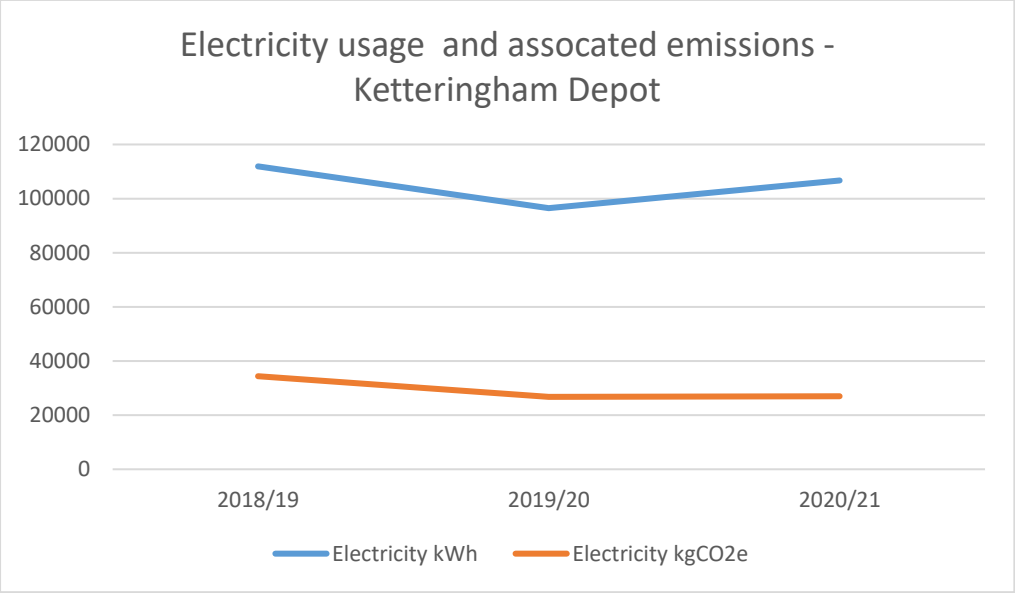

Figure 13 Electricity usage and emissions at Ketteringham Depot

Figure 13 shows a reduction in electricity use between 2018-19 and 2019-20 and then an increase to 2020 - 21.

Business centres, public toilets and temporary accommodation centres have not been discussed in detail in this report as they have a negligible overall impact of the total carbon footprint.

Transport related emissions

Waste Fleet

Emissions associated with the waste fleet are the largest emitter, at 1,222 tCO_2e in 2020/21. The emissions have been reducing since the baseline year (1,326 tCO_2e).

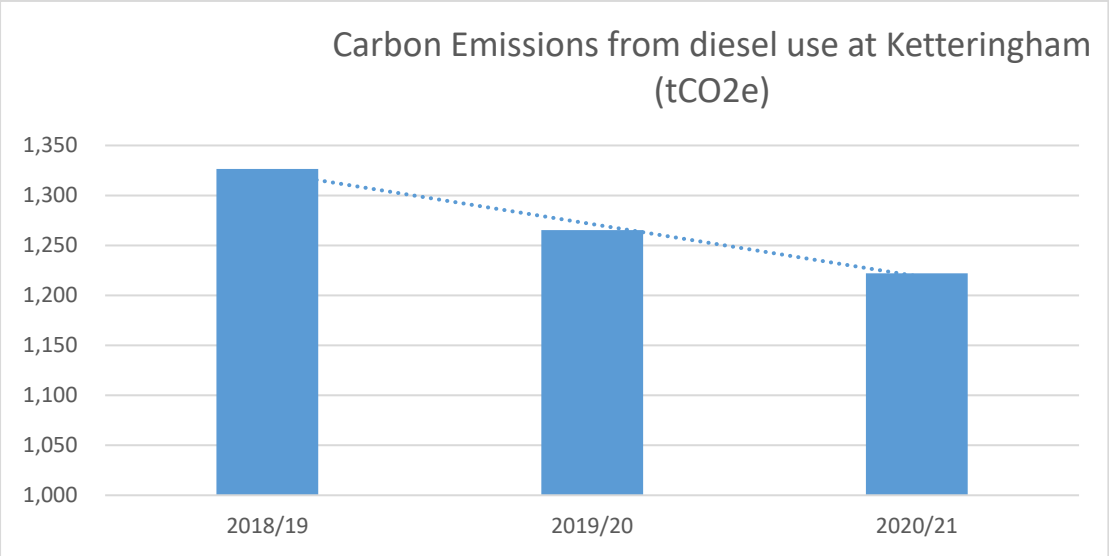

Figure 13 trends in emissions from waste vehicles

Diesel emissions at Ketteringham Depot have been reducing year on year since the 2018/19 baseline level. The main reason for this is less diesel use by the more efficient vehicles which have been entering the fleet. The introduction of newer vehicles has continued in 2020/21 accounting for the continued reduction in emissions.

Staff travel

The emissions associated with staff and member business travel are 53.7 tCO_2e. This is a 41% decrease compared to 2019/20 (90.4 tCO_2e) and an 11% decrease since the baseline year (60.6 tCO_2e). This is largely due to less miles being claimed for, COVID restrictions meant that fewer journeys could be made by council staff, and we have increased video calling to reduce the need for travel.

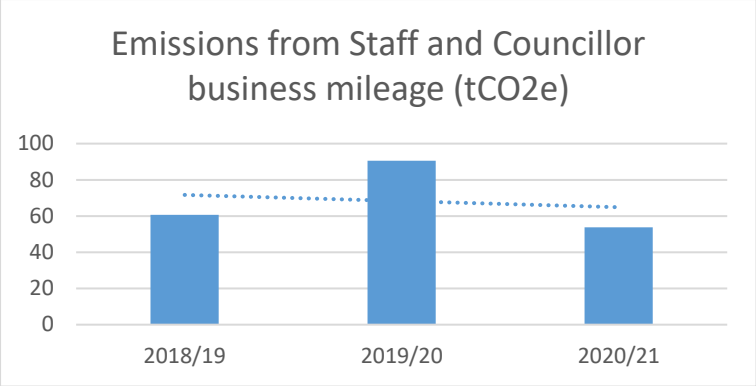

Figure 14 trends in emissions from staff and councillor business travel

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.

Water Emissions

Limited water meter data was available for the South Norfolk 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 the council owned buildings indicates that there are 2 main streams: recycling 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

All figures in tonnes CO2e				
Scope 1		**2018/19**	**2019/20**	**2020/21**
Building/Activity	**fuel**	**emissions**	**emissions**	**emissions**
South Norfolk House	oil	112.33	119.08	162.51
Wymondham LC	gas	431.39	479.28	162.34
Diss LC	gas	374.66	183.71	28.18
Waste and street scene fleet	diesel	1326.39	1265.37	1222.22
grounds maintenance Ketteringham	diesel	17.59	16.33	16.33
Ketteringham Depot	oil	24.68	24.72	24.72
Temporary Accommodation 1	gas	12.33	12.59	14.33
TOTAL		2299.38	2101.09	1630.64
Scope 2		**2018/19**	**2019/20**	**2020/21**
Building/Activity	**fuel**	**emissions**	**emissions**	**emissions**
South Norfolk House	electricity	168.55	136.97	113.78
Wymondham LC	electricity	87.43	90.30	80.71
Diss LC	electricity	70.03	69.21	26.69
Ketts Park	electricity			
Long Stratton LC	electricity	31.94	59.57	40.96
Ketteringham Depot	electricity	31.68	24.66	24.87
Diss Mere toilets	electricity	0.83	0.78	0.74
Wymondham Market Place toilets	electricity	0.00	0.00	0.00
Hingham Market Place toilets	electricity	0.27	0.52	0.00
Long Stratton toilets	electricity	0.62	0.46	0.07
Church Plain Loddon toilets	electricity	0.01	0.00	0.00
Harleston toilets	electricity	0.68	2.93	0.20
Wymondham Ticket Machine	electricity	0.04	0.70	0.62
Diss Ticket Machine	electricity	2.34	2.12	1.88
Temporary Accommodation 2	electricity	10.51	10.29	8.97
Temporary Accommodation 3	electricity	0.49	0.33	0.00
Temporary Accommodation 5	electricity	3.02	2.40	5.72
Temporary Accommodation 1	electricity	7.25	3.72	0.64
Temporary Accommodation 4	electricity	0.00	0.00	0.00

streetlights (all)	electricity	65.61	22.13	18.67
TOTAL		481.31	427.07	324.53
Scope 3		**2018/19**	**2019/20**	**2020/21**
Building/Activity	**fuel**	**emissions**	**emissions**	**emissions**
Staff & member business travel	mileage	60.57	90.46	53.77
Loddon BC	gas	2.37	9.48	5.61
Old Barn Annexe, Diss	electricity	2.49	3.50	0.00
Loddon BC	electricity	2.01	1.21	1.17
Diss Business Centre	electricity	6.96	4.50	2.43
Crafton House	electricity	35.56	32.77	23.70
Trumpeter House	electricity	7.87	11.90	10.40
South Norfolk House	electricity T&D	14.37	11.63	9.78
Wymondham LC	electricity T&D	7.45	7.67	6.94
Ketts Park	electricity T&D			
Diss LC	electricity T&D	5.97	5.88	2.30
Long Stratton LC	electricity T&D	2.72	5.06	3.52
Ketteringham Depot	electricity T&D	2.70	2.09	2.14
Diss Mere toilets	electricity T&D	0.07	0.07	0.06
Wymondham Market Place toilets	electricity T&D	0.00	0.00	0.00
Hingham Market Place toilets	electricity T&D	0.02	0.04	0.00
Long Stratton toilets	electricity T&D	0.05	0.04	0.01
Church Plain Loddon toilets	electricity T&D	0.00	0.00	0.00
Harleston toilets	electricity T&D	0.06	0.25	0.02
Wymondham Ticket Machine	electricity T&D	0.00	0.06	0.05
Diss Ticket Machine	electricity T&D	0.20	0.18	0.16
Old Barn Annexe, Diss	electricity T&D	0.21	0.30	0.00
Loddon BC	electricity T&D	0.17	0.10	0.10
Diss Business Centre	electricity T&D	0.59	0.38	0.21
Crafton House	electricity T&D	3.03	2.78	2.04
Trumpeter House	electricity T&D	0.67	1.01	0.89
Temporary Accommodation 2	electricity T&D	0.90	0.87	0.77
Temporary Accommodation 3	electricity T&D	0.04	0.03	0.00
Temporary Accommodation 5	electricity T&D	0.26	0.20	0.49
Temporary Accommodation 1	electricity T&D	0.62	0.32	0.05
Temporary Accommodation 4	electricity T&D	0.00	0.00	0.00

Streetlights (all)	electricity T&D	5.59	1.88	1.61
South Norfolk House	water	0.51	0.51	0.20
South Norfolk House	waste general	0.92	0.92	0.91
South Norfolk House	waste recycling	1.89	1.89	1.88
Wymondham Leisure Centre	water	4.71	4.09	1.28
Wymondham Leisure Centre	waste general	2.14	2.14	2.13
Wymondham Leisure Centre	waste recycling	0.92	0.92	0.91
Long Stratton LC	water	0.43	0.69	0.27
Long Stratton LC	waste general	0.92	0.92	0.91
Long Stratton LC	waste recycling	0.92	0.92	0.91
Ketts Park	waste general			
Ketts Park	waste recycling			
Ketts Park	water			
Diss LC	water	2.91	2.85	1.15
Diss LC	waste general	0.92	0.92	0.91
Diss LC	waste recycling	0.61	0.61	0.61
Diss Mere toilets	water	0.62	0.18	0.00
Wymondham Market Place toilets	water	0.29	0.00	0.00
Hingham Market Place toilets	water	0.08	0.00	0.00
Long Stratton toilets	water	0.42	0.23	1.22
Church Plain Loddon toilets	water	0.00	0.00	0.00
Harleston toilets	water	0.05	0.00	0.00
Ketteringham Depot	water	0.25	0.24	0.24
TOTAL		**183.02**	**212.65**	**141.77**
1,2,3	**TOTAL**	**2963.71**	**2740.81**	**2096.93**