South Norfolk Council Carbon Footprint report for 2023/24

Highlights:

Our carbon footprint calculations have been independently verified by Groundwork East. The verification recommended some changes to our methodology, which have been applied for 2023/24 as well as applied to all reporting years retrospectively. This report includes the verified carbon footprint totals for all years, however the previous years' reports will not be updated.

During this reporting period the emissions have reduced since the previous year. The main reason for this reduction removing the emissions from grid electricity as we now have a 100% REGO* (Renewable Energy Guarantees of Origin) certified energy tariff. Moving office base from South Norfolk House to the Horizon Building has also reduced emissions.

The highest proportion of emissions in the footprint come from diesel used in the waste collection vehicles and gas consumption at Wymondham Leisure Centre.

South Norfolk Council's 2023/24 (verified) carbon footprint is 1886 tCO_2e.

*Renewable Energy Guarantees of Origin (REGO) certificates allow electricity suppliers to show customers how much electricity has been generated from renewable sources each year.

Contents

Background to this Report

This report calculates the greenhouse gas emissions arising from the council's own activities. We publish our organisational Carbon Footprint report each year. 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 2023 carbon conversion factors.

South Norfolk Council
Horizon Centre, Broadland Business Park, Peachman Way, Norwich, NR7 0WF
1st April 2023 to 31st March 2024

We have a target of net zero emissions by 2030, the emissions in this report are the basis for this target.

Scopes and Inclusions

Scope	Fuel/Activity	Location	Data Source
Scope 1	Main Gas	Wymondham Leisure Centre	Bills/meter reads
		Diss Leisure Centre	Bills/meter reads
		Temporary Accommodation	Bills/meter reads
	Heating oil	Ketteringham Depot	Oil deliveries
	Diesel in owned vehicles	Waste and street scene Fleet	Diesel used – fuel pump data
Scope 2	Electricity	South Norfolk House	Bills/meter reads
		Wymondham Leisure Centre	Bills/meter reads
		Diss Leisure Centre	Bills/meter reads
		Long Stratton Leisure Centre	Bills/meter reads
		Ketteringham Depot	Bills/meter reads
		Long Stratton toilets	Bills/meter reads
		Wymondham Ticket Machine	Bills/meter reads
		Diss Ticket Machine	Bills/meter reads
		Temporary Accommodation	Bills/meter reads
		Streetlights	Bills/meter reads
Scope 3	Mileage	Staff and councillor business travel	From mileage claims
	Gas	Loddon Business Centre	Bills/meter reads
	Electricity	Old Barn Annexe, Diss	Bills/meter reads
		Loddon Business Centre	Bills/meter reads
		Diss Business Centre	Bills/meter reads
		Crafton House	Bills/meter reads
		Trumpeter House	Bills/meter reads
	Electricity Transmission and Distribution	All buildings	Bills/ meter reads
	Waste disposal in council buildings	Horizon Centre	Waste notices and estimates of volume and frequency of bin emptying
		Long Stratton Leisure Centre	Waste notices and estimates of volume and frequency of bin emptying

		Diss Leisure Centre	Waste notices and estimates of volume and frequency of bin emptying
		Wymondham Leisure Centre	Waste notices and estimates of volume and frequency of bin emptying
	Water use	All buildings where data available	Bills
	Electricity and gas use	Framingham Earl Leisure Centre	Display Energy Certificate
	Carbon Emissions	Temporary Accommodation owned by the council but bills paid by residents	EPC carbon emission estimates

Scopes explained

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.

All the grid electricity purchased by the council is 100% renewable backed with REGO certificates. Therefore, the emissions associated with this purchased electricity will be recorded in the gross footprint, but not in the net footprint and overall total. The emissions associated with the purchased renewable electricity are still recorded within the gross footprint, as it is important to track the electricity use. If the electricity tariffs change, the emissions would return to the net footprint.

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.

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. In most cases the council is the bill payer, however there are some temporary accommodations which is owned by the Council, but the tenants pay the bills. In these cases, we do not have access to bill data so have used the estimated emissions from the EPC for each property.

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 2023/24 has been calculated as 1,886.52tCO_2e, the breakdown is shown in table 1.

	2023/24	tCO_2e
Scope 1	Natural Gas (scope 1)	519.28
	Heating Oil	34.88
	Fuel for owned vehicles	1205.93
Scope 2	Electricity (scope 2)	327.66
Scope 3	Electricity T&D	32.53
	Staff Travel	70.07
	Waste Disposal	6.34
	Water Use	4.47
	natural gas and electricity (scope 3)	94.83
Total Gross Emissions		**2295.99**
Green Tariffs (100% renewable electricity supplies)		**-409.47**
Total Net Emissions		**1886.52**

Intensity Measurement

In 2021 the population of South Norfolk was 141,900. This can be used to calculate an intensity measurement of kgCO_2e per resident.

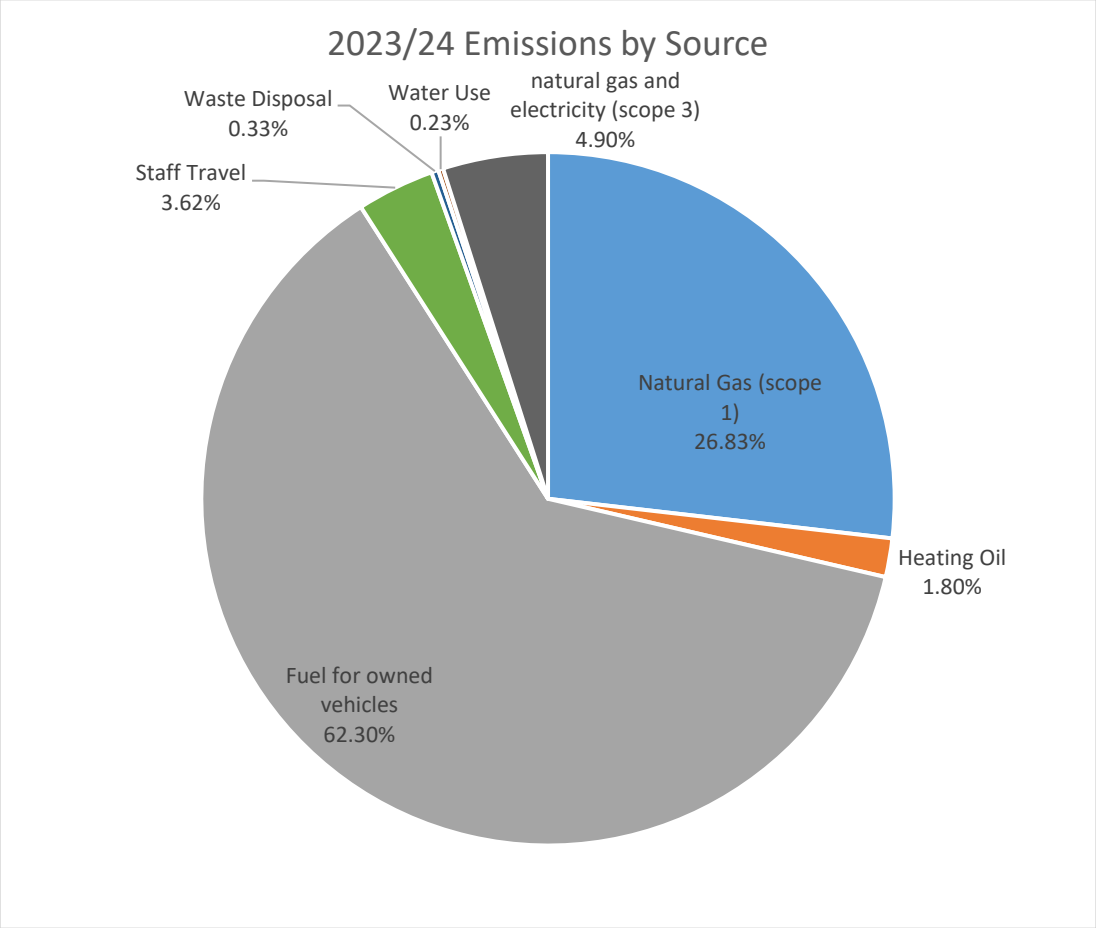
This then allows for comparison with other councils. It should be noted though that not all councils offer the same services or report on the same activities.

Table 2 shows a comparison with other councils in Norfolk.

Council	GHG emissions (tCO2e)	Population	Intensity ratio (kgCO2e per resident)
South Norfolk	1,886.52	141,900	13.29
Broadland (2023/24)	395.37	130,700	3.03
Norwich (2021/22)	3,610	144,000	25.07
Breckland (2022/23)	4,119	141,500	29.11
Great Yarmouth (2019/20)	7,843	99,700	78.67
Kings Lynn and West Norfolk (2022/23)	2,607	154,300	16.89
North Norfolk (2023/24)	4,765	103,000	46.26

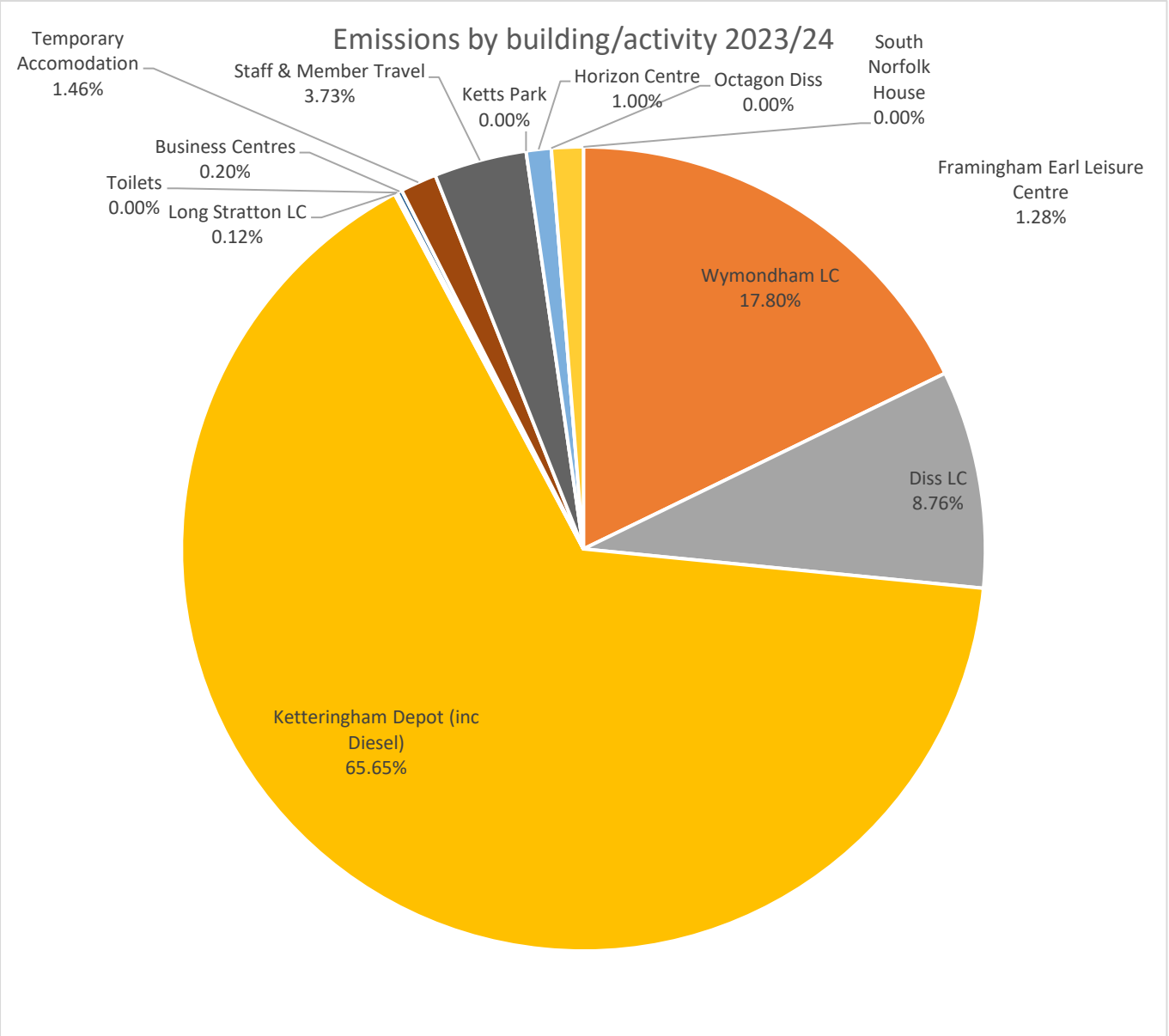
Breakdown of Emissions

Figure 1: Pie chart of emissions from source



The highest proportion of South Norfolk Council's emissions is attributed to fuel consumption of Council owned vehicles, which includes the waste fleet and is mainly from diesel. Natural gas is the second highest source of emissions in the footprint. Please note that this is for the net emissions so electricity from a 100% renewable supply is not shown in this chart.

Figure 2: Pie chart of emissions from building/activity



The chart shows the emissions associated with each building or activity. Where the emissions show 0 for a building this is because the only fuel used on site is electricity and it has a green tariff so has been removed from the total footprint.

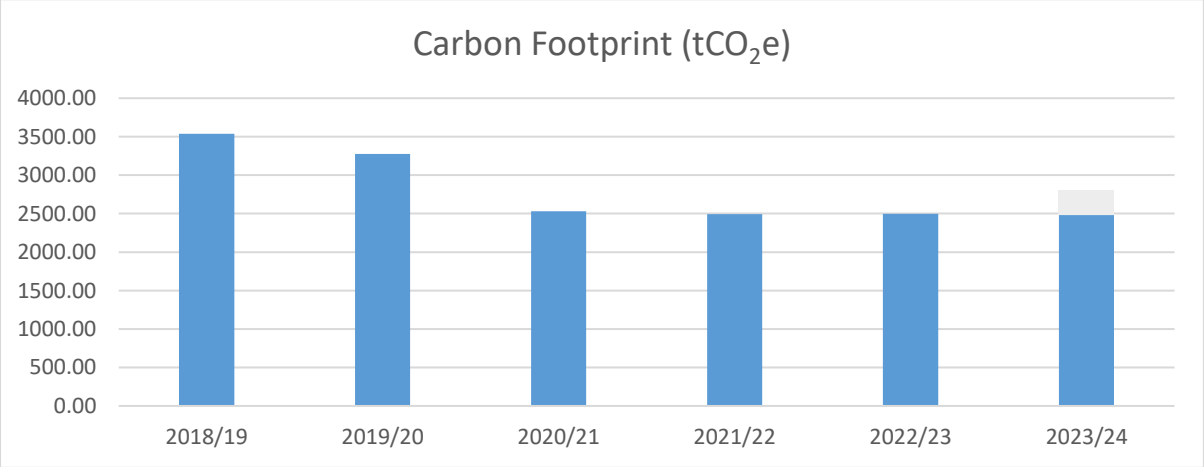
Ketteringham depot has the highest emissions in the carbon footprint, followed by Wymondham and Diss Leisure Centres.

Emissions Trends

Table 3: Changes in emissions over time

	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Scope 1	2299.38	2101.09	1630.64	1516.55	1565.86	1760.10
Scope 2	481.31	427.07	324.53	340.60	288.19	327.66
Scope 3	183.02	212.65	141.77	161.43	184.33	208.23
Total gross emissions	2963.71	2740.81	2096.93	2018.58	2038.38	2295.99
Offsets						0
Green tariff						-409.47
Total annual net emissions						**1886.52**
Outside of scopes						72.9

Figure 3: Trends in annual emissions

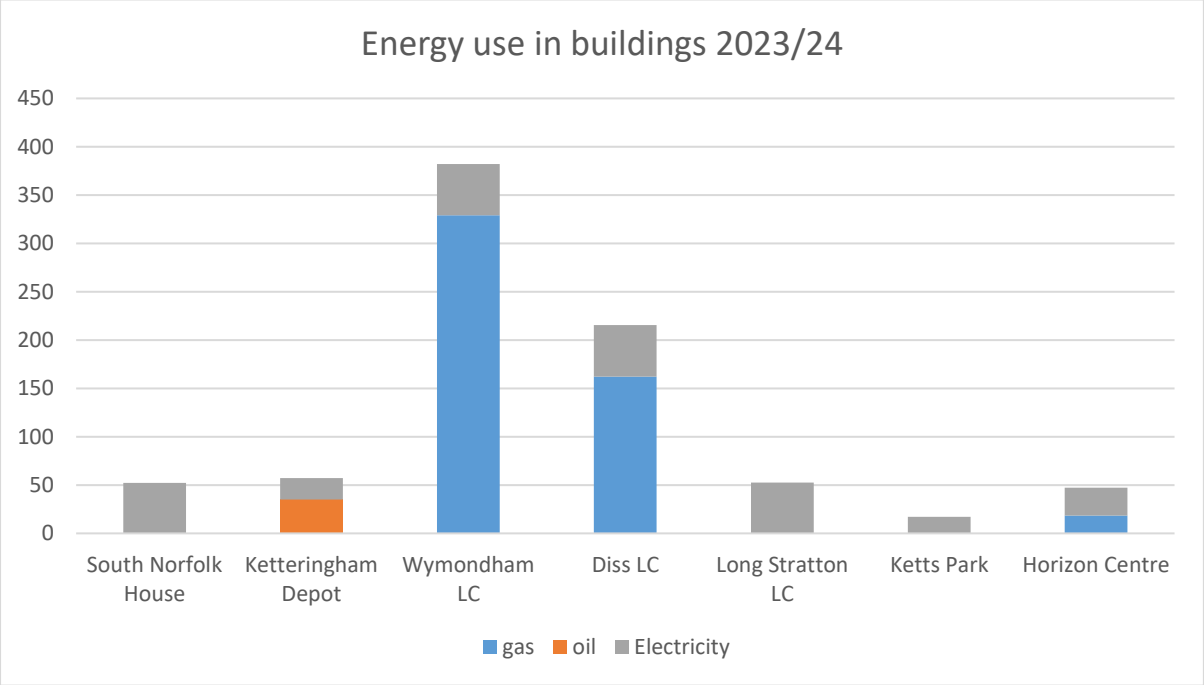


Annual emissions have continued on a downward trend since the baseline report in 2018/19. There are a number of reasons for the decline in emissions: Covid causing a reduction in office and leisure centre use, retrofit works at buildings, moving offices to the Horizon centre and falsely low gas use at Wymondham Leisure Centre due to a broken gas meter.

In our 2023/24 carbon footprint, we have been able to remove emissions associated with electricity consumption at our buildings, as we have use a 100% renewable tariff. This applies to all contracts where South Norfolk Council is responsible for the bills.

Energy Use in Buildings

Figure 4: Energy use by building



The bar chart shows the emissions from different fuels in the Council's buildings. Gas consumption is highest at Wymondham and Diss Leisure Centres. The electricity use, shown in pale grey, has been included on the graph for illustrative purposes as these emissions are not counted in the overall net footprint, as the buildings use a 100% renewable tariff.

Horizon Centre

The Horizon Centre is the new office building for South Norfolk Council and Broadland District Councils. The emissions associated with the building are split between the two councils. The Horizon Centre has a considerable roof mounted solar array and solar carports. Initially there was a gas boiler system installed, which was removed and replaced with heat pumps in February 2024. The emissions savings from this will be shown in the 2024/25 footprint.

Table 4: Emission sources for Horizon Centre

	2023/24 (tCO_2e)
Grid Electricity	26.35
Electricity Transmission and Distribution losses	2.28
Electricity generated from PV	*409.59 1,978,005.00 (kWh)*
Electricity exported to grid (June 2023-March 2024)	*18.25 88,128 (kWh)*
Gas	18.57
Water	0.11
Waste – general	0.12
Waste – recycling	0.07
Waste – food	0.02
Waste – Waste from Electrical and Electronic Equipment (WEEE)	0.00

The table shows the emissions associated with each energy use at the Horizon Centre. The electricity grid tariff is 100% renewable, so this is not counted towards the total footprint. The electricity generated and exported is expressed in kWh and then tonnes of emissions for grid electricity that are saved, this is for information only and does not form part of the overall footprint.

The main building at the Horizon Centre no longer uses gas as of February 2024, so this saving will show in the 2024/25 report. This is because the gas boilers have been replaced by air source heat pumps. The heat pumps run on electricity, so due to the solar PV and renewable tariff there will be no emissions associated with this.

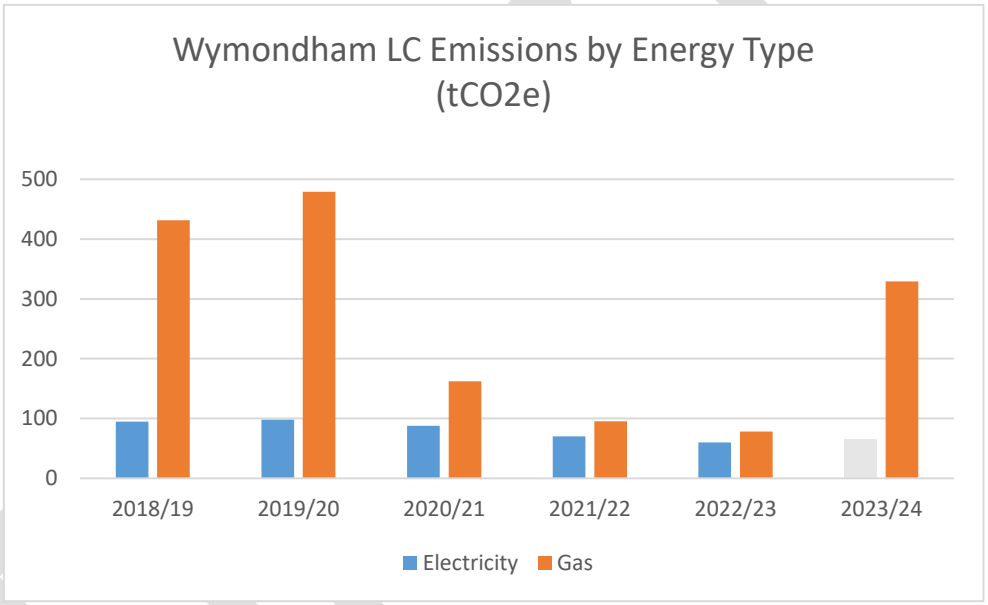
Wymondham Leisure Centre

Wymondham Leisure Centre is the largest leisure centre owned by South Norfolk Council and has a pool and gym. The building is heated using a combined heat and power (CHP) unit, run on natural gas that also produces heat and electrical power.

Table 5: Trends in emissions, Wymondham Leisure Centre

	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Electricity	94.88	97.97	87.65	55.53	48.21	53.27
Gas	431.39	479.28	162.34	95.39	77.95	329.00

Figure 5: Trends in emissions, Wymondham Leisure Centre



Explanations

Until August 2023, one of the gas meters at Wymondham Leisure Centre was faulty and consequently gas consumption has been recorded artificially low. For 2023/24, the gas use is much higher than previous years due to the meter having been fixed, therefore the meter has been recording the correct consumption for more than half the year.

The emissions from electricity use at Wymondham LC are not counted towards the total carbon footprint, as the electricity is supplied using a 100% renewable tariff.

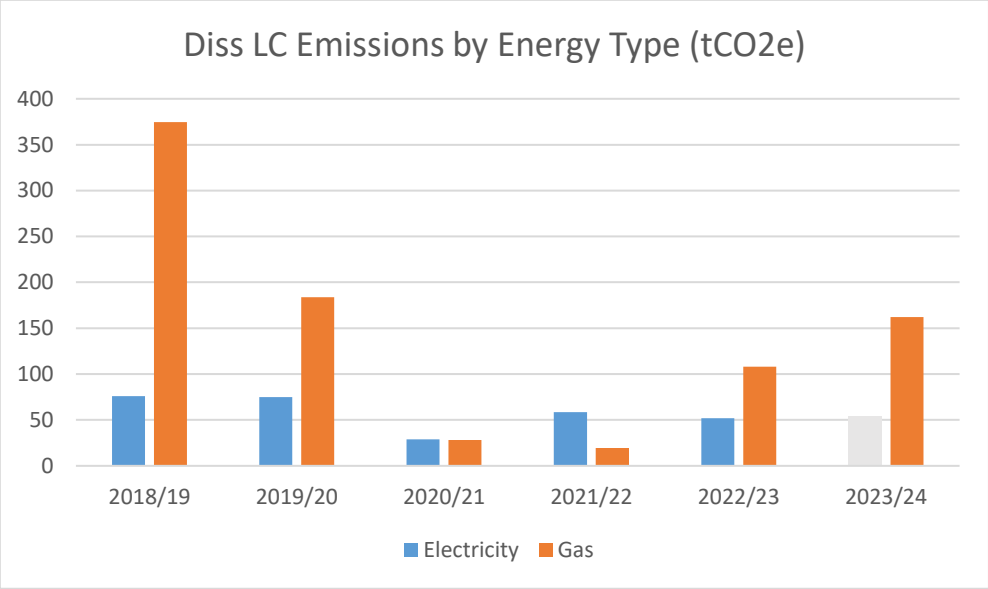
Diss Leisure Centre

Diss Leisure Centre has a pool and a gym area, and significant refurbishment works are currently taking place. In 2023/24, the gas boilers were removed and replaced with heat pumps, the walls and roof were insulated, and a solar PV array added. The emissions benefits of these works will be shown in the 2024/25 report.

Table 6: Trends in emissions, Diss Leisure Centre

	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Electricity	76	75.09	28.99	58.37	51.87	53.41
Gas	374.66	183.71	28.18	19.48	107.97	162.21

Figure 6: Trends in emissions, Diss Leisure Centre



Explanations

The emissions have risen since 2020/21 due to the reopening of the leisure centre and an increase in use following the pandemic closures. Emissions from electricity consumption in this reporting year do not count towards the total carbon footprint as the electricity is supplied from a 100% renewable tariff.

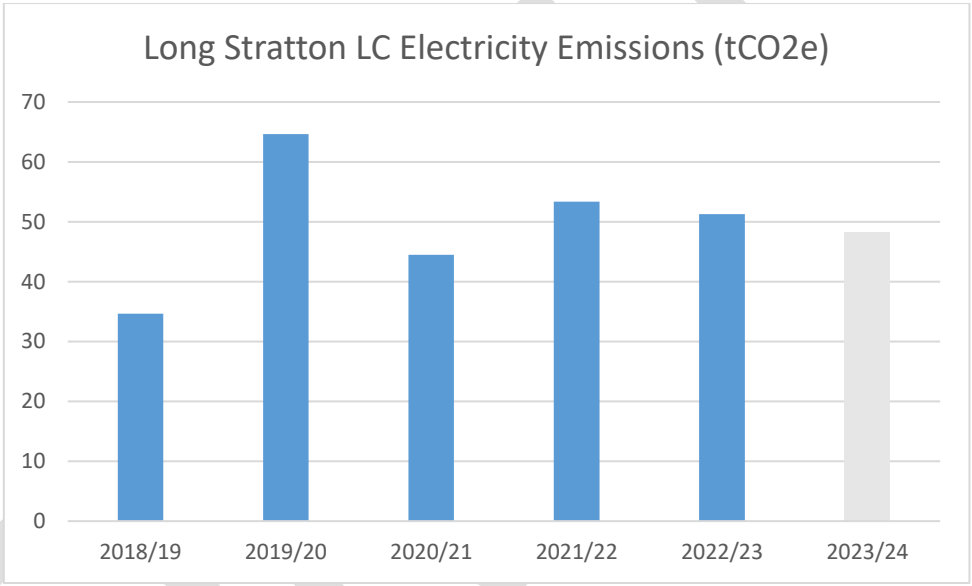
Long Stratton Leisure Centre

Long Stratton Leisure Centre has a gym and sport class area. It was renovated in 2019 and has a heat pump for heating and hot water.

Table 7: Trends in emissions, Long Stratton Leisure Centre

	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Electricity	34.67	64.62	44.49	53.35	51.26	48.29

Figure 7: Trends in emissions, Long Stratton Leisure Centre



Explanations

The are no emissions associated with energy consumption from Long Stratton Leisure Centre that are counted in the footprint total, because the site is completely run from electricity which comes from a 100% renewable tariff.

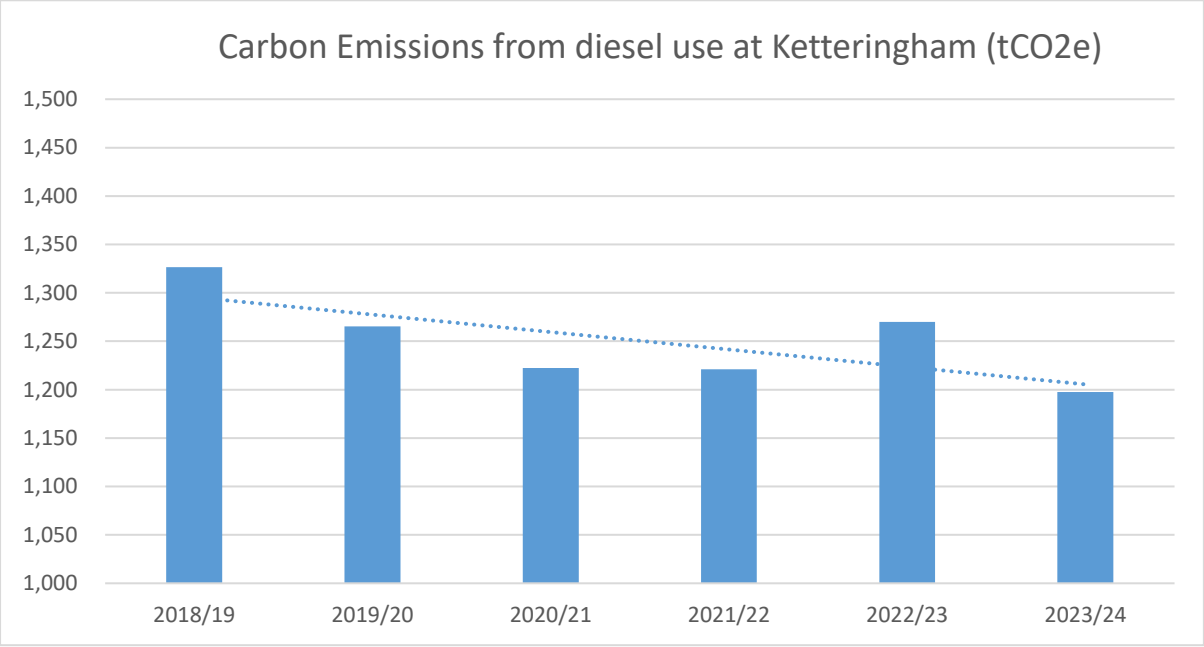
Ketteringham Depot

Ketteringham Depot is the waste collection and grounds maintenance depot for South Norfolk Council. The largest proportion of emissions in the Council's total footprint is attributed to the diesel use of the vehicles based at the depot.

Table 8: Trends in emissions, Ketteringham Depot

	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Electricity	31.68	24.66	24.87	23.93	24.22	20.70
Heating Oil	24.68	24.72	24.72	24.72	35.36	34.88
Diesel	1326.39	1265.37	1222.22	1221.12	1270.06	1197.69
HVO						1.07
HVO (outside of scopes)						72.9

Figure 8: Trends in emissions, Ketteringham Depot



Explanations

There has been a downward trend in diesel use at the depot. In 2023/24, some HVO fuel was mixed with the diesel in some vehicles. Hydrotreated vegetable oil (HVO) is a biofuel that has very low greenhouse gas emissions associated with its use, as the emissions that come from burning the fuel are offset by the carbon absorbed when the crop was grown.

The electricity emissions for Ketteringham depot do not count towards the total footprint because they come from a 100% renewable tariff.

Staff travel emissions

The emissions associated with staff and member business travel are 70tCO_2e. This is an increase compared to last year/baseline year. However, due to a change in HR and expenses system it was not possible to obtain any actual data for 2023/24. Therefore, the total has been estimated by taking an average of emissions from staff travel for all previous reporting years.

Independent Verification

As our baseline report was back completed in 2018/19, we have had the carbon footprint report for this reporting year (2023/24) independently verified by Groundwork East, to ensure that we continue to align with the GHG Protocol and best practice.

Since 2018/19 we have been producing our reports in house based on the methodology in our baseline report, which was also produced by Groundwork East. Through the verification, Groundwork East recommended that we make a few changes to how we are reporting our scope 3 emissions. Although we have been following the correct methodology, best practice for reporting scope 3 emissions has updated since our baseline report was conducted.

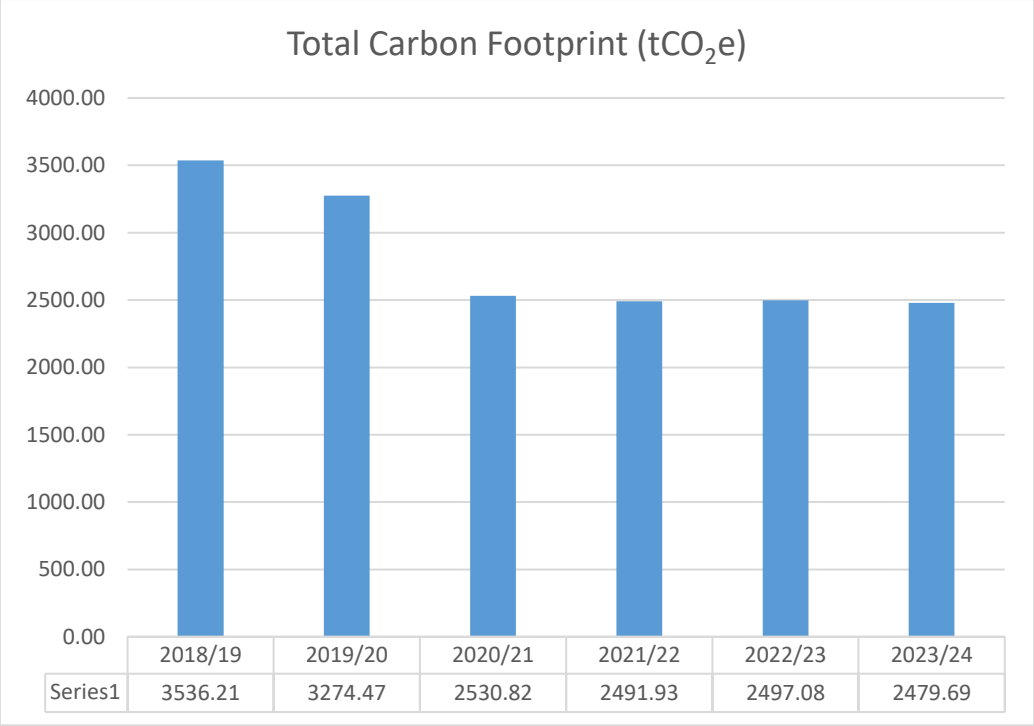
The first recommendation relates to sessions associated with water treatment. Groundwork East have recommended that where data isn't available for all sites using water bills, we estimate that 90% of the water used goes to water treatment.

The second relates to additional emissions factors associated with scope 3 electricity. Our existing methodology included reporting emissions associated with electricity transmission and distribution losses (includes the energy loss that occurs in the transmission of electricity between the generator/powerplant to the organisations that purchase it). Groundwork East recommended that we also include well to tank emissions associated with both electricity consumption and electricity transmission. This covers the emissions associated with the extraction, refining and transportation of primary fuels before their use in the generation of electricity.

The third is the well to tank emissions associated with all liquid and gas fuels. This accounts for the upstream emissions associated with the extraction, refining and transportation of the raw fuel sources to where the fuel is used, prior to its combustion.

It was also recommended to update all previous carbon footprints to include these new conversion factors and additions to the footprint. Following this, the chart below shows the amended carbon footprint totals for all reporting years since the baseline year.

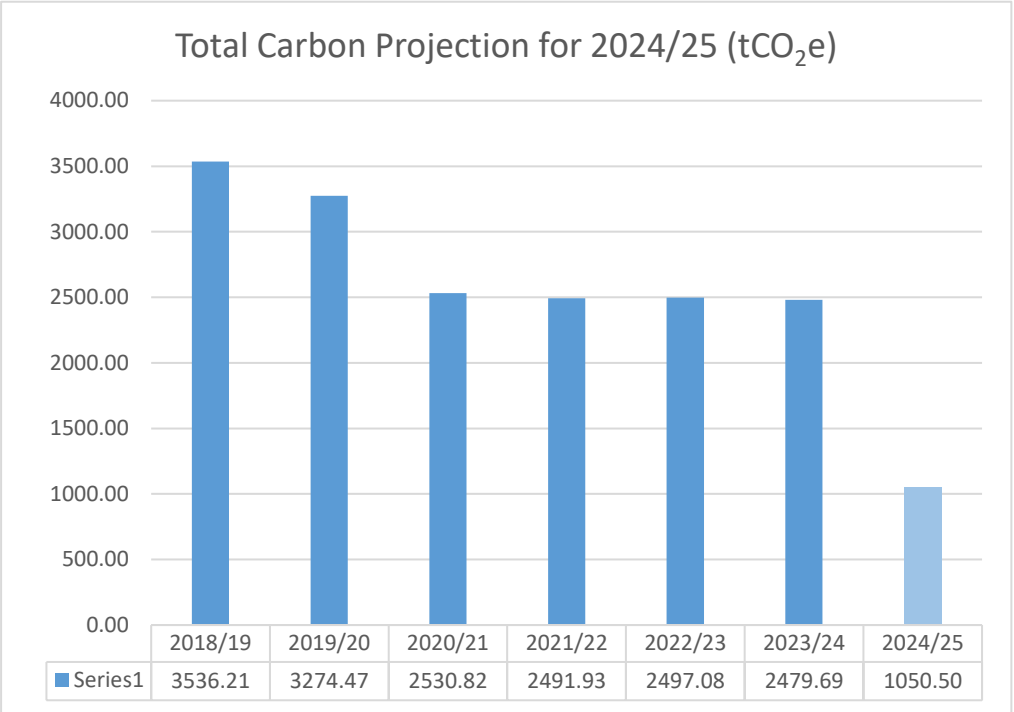
Figure 9: Annual emissions trends with audit recommendations



2024/25 Footprint Projections

We are undertaking a number of actions that we expect to further reduce our carbon footprint. Using estimates from these actions we have made projections for 2024/25.

Figure 10: Carbon footprint projection for 2024/25



The projections are based on switching the waste fleet from diesel to HVO fuel. We have also undertaken extensive decarbonisation works at our office, Diss Leisure Centre and a Temporary Housing Accommodation. For these properties we have removed gas boilers and replaced with heat pumps. This will have a significant effect on our carbon footprint as the grid electricity supply used by the heat pumps uses a 100% renewable tariff. This effectively removes scope 1 and 2 emissions associated with electricity consumption at these sites.

The projection also includes some expected increases to the footprint. The first is attributed to gas consumption at Wymondham Leisure Centre, whereby the wetside gas meter has now been fixed so we will have an accurate estimate of gas consumption using data from the 2024 calendar year. The second expected increase within the next carbon footprint is attributed to staff business mileage, as for 2023/24 it was not possible to obtain accurate data, so an average of previous years was used. For the future projection we have doubled the accurate data that was available for the first half of 2024/25.

These projections also include all of the changes to methodology as recommended through the independent verification.

Appendix

Data tables

Scope 1		**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**
Building/Activity	**fuel**	**emissions**	**emissions**	**emissions**	**emissions**	**emissions**	**emissions**
South Norfolk House	oil	112.33	119.08	162.51	127.17	40.76	0.00
Wymondham LC	gas	431.39	479.28	162.34	95.39	77.95	329.00
Diss LC	gas	374.66	183.71	28.18	19.48	107.97	162.21
Waste and street scene fleet	diesel	1326.39	1265.37	1222.22	1221.12	1270.06	1197.69
grounds maintenance Ketteringham	diesel	17.59	16.33	16.33	16.34	4.09	
Ketteringham Depot	oil	24.68	24.72	24.72	24.72	35.36	34.88
Ketteringham depot	HVO						1.07
Horizon Centre	gas					19.20	18.57
SNC handy van	diesel						7.18
Communities van	HVO						0.00
Temporary Accommodation	gas						9.51
TOTAL		**2299.38**	**2101.09**	**1630.64**	**1516.55**	**1565.86**	**1760.10**

Scope 2		**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**
Building/Activity	**fuel**	**emissions**	**emissions**	**emissions**	**emissions**	**emissions**	**emissions**
South Norfolk House	electricity	168.55	136.97	113.78	111.83	76.68	48.10
Wymondham LC	electricity	87.43	90.30	80.71	51.02	44.17	49.03
Diss LC	electricity	70.03	69.21	26.69	53.63	47.57	49.24
Ketts Park	electricity				14.99	13.08	15.93
Long Stratton LC	electricity	31.94	59.57	40.96	49.01	46.96	48.29
Ketteringham Depot	electricity	31.68	24.66	24.87	23.93	24.22	20.70
Wymondham Ticket Machine	electricity	0.04	0.70	0.62	0.59	0.53	0.57
Diss Ticket Machine	electricity	2.34	2.12	1.88	1.81	1.60	1.72
streetlights (all)	electricity	65.61	22.13	18.67	14.79	12.97	16.64
Horizon Centre	electricity					0.01	26.35
Octagon Diss	electricity					1.97	2.73
Ella May Barnes Building	electricity					4.83	39.67
Temporary Accommodation	electricity						8.71
TOTAL		**481.31**	**427.07**	**324.53**	**340.60**	**288.19**	**327.66**

Scope 3		2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Building/Activity	**fuel**	**emissions**	**emissions**	**emissions**	**emissions**	**emissions**	**emissions**
Staff&member busines travel	mileage	60.57	90.46	53.77	67.78	62.77	70.07
Loddon BC	gas	2.37	9.48	5.61	5.38	4.16	3.69
Old Barn Annexe, Diss	electricity	2.49	3.50	0.00	3.43	1.78	2.95
Loddon BC	electricity	2.01	1.21	1.17	1.02	0.79	0.93
Diss Business Centre	electricity	6.96	4.50	2.43	3.27	15.92	12.66
Crafton House	electricity	35.56	32.77	23.70	27.15	26.49	25.23
Trumpeter House	electricity	7.87	11.90	10.40	8.07	0.00	0.00
Roxburgh House	electricity						7.52
South Norfolk House	electricity T&D	14.37	11.63	9.78	9.90	7.01	4.16
Wymondham LC	electricity T&D	7.45	7.67	6.94	4.51	4.04	4.24
Ketts Park	electricity T&D				1.33	1.20	1.38
Diss LC	electricity T&D	5.97	5.88	2.30	4.75	4.30	4.18
Long Stratton LC	electricity T&D	2.72	5.06	3.52	4.34	4.30	4.18
Ketteringham Depot	electricity T&D	2.70	2.09	2.14	2.12	2.22	1.79
Wymondham Ticket Machine	electricity T&D	0.00	0.06	0.05	0.05	0.05	0.05
Diss Ticket Machine	electricity T&D	0.20	0.18	0.16	0.16	0.15	0.15
Old Barn Annexe, Diss	electricity T&D	0.21	0.30	0.00	0.30	0.16	0.26
Loddon BC	electricity T&D	0.17	0.10	0.10	0.09	0.07	0.08
Diss Business Centre	electricity T&D	0.59	0.38	0.21	0.29	1.46	1.09
Crafton House	electricity T&D	3.03	2.78	2.04	2.40	2.42	2.18
Trumpeter House	electricity T&D	0.67	1.01	0.89	0.71	0.00	0.00
Roxburgh House	electricity T&D						0.65
Streetlights (all)	electricity T&D	5.59	1.88	1.61	1.31	1.19	1.44
Octagon Diss	electricity T&D					0.18	0.24
Ella May Barnes Building	electricity T&D					0.44	3.43
South Norfolk House	water	0.51	0.51	0.20	0.20	0.06	0.03
South Norfolk House	waste general	0.92	0.92	0.91	0.91	0.91	0.00

South Norfolk House	waste recycling	1.89	1.89	1.88	1.88	0.00	0.00
Wymondham Leisure Centre	water	4.71	4.09	1.28	0.84	1.33	2.47
Wymondham Leisure Centre	waste general	2.14	2.14	2.13	2.13	2.13	2.13
Wymondham Leisure Centre	waste recycling	0.92	0.92	0.91	0.91	0.91	0.91
Long Stratton LC	water	0.43	0.69	0.27	0.14	0.22	0.44
Long Stratton LC	waste general	0.92	0.92	0.91	0.91	0.91	0.91
Long Stratton LC	waste recycling	0.92	0.92	0.91	0.91	0.91	0.91
Ketts Park	waste general				0.00	0.00	
Ketts Park	waste recycling				0.00	0.00	
Ketts Park	water				0.03	0.00	0.00
Diss LC	water	2.91	2.85	1.15	0.72	0.87	1.05
Diss LC	waste general	0.92	0.92	0.91	0.91	0.91	0.76
Diss LC	waste recycling	0.61	0.61	0.61	0.61	0.00	0.51
Framingham Earl Leisure Centre	Electricity					10.81818	7.23
Framingham Earl Leisure Centre	gas					21.63636	16.73
Ketteringham Depot	water	0.25	0.24	0.24	0.24	0.08	0.37
Octagon Diss	water					0.00	0.00
Horizon Centre	electricity T&D					0.00	2.28
Horizon Centre	water					0.01	0.11
Horizon Centre	waste general					0.00	0.12
Horizon Centre	waste recycling					0.00	0.07
Horizon Centre	waste food						0.02
Horizon Centre	waste WEEE						0.00
Temporary Accommodation	electricity T&D						0.75
Temporary Accommodation	From EPCs						17.90
TOTAL		183.02	212.65	141.77	161.43	184.33	208.23