Carbon Footprint Appraisal
for
Newbury Town Council

Assessment Period:
1st April 2022 – 31st March 2023

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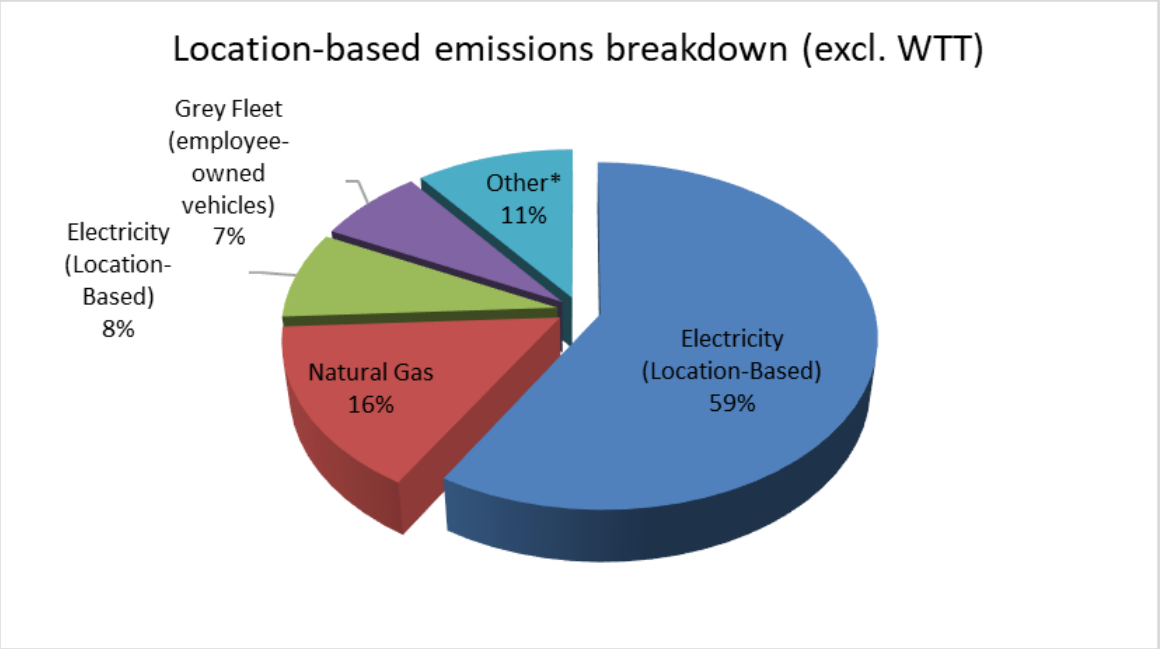
Executive Summary

Current Performance

- → NTC's total location-based emissions are 38.43 tCO_2e, a decrease of 43.6 % compared with the baseline year of 2018/19.
- → The most significant emission source is electricity accounting for 58.62% of NTC's carbon footprint.
- → The estimated error margin is a quite low given the accuracy of data provided (+/- 0.93 tCO_2e).

Recommendations

- → Offset the GHG emissions created within this data period to maintain your carbon neutrality.
- → Switch to 100% renewable energy tariffs to reduce emissions associated with electricity use.
- → Evaluate the business case for installing additional renewable energy generation e.g., solar and hydro (the business case for these may be far stronger given steeply rising energy prices).
- → Investigate swapping owned sites from gas-powered heating to sustainable alternatives.
- → Investigate opportunities to reduce site energy consumption across all sites through implementing regular energy monitoring and conducting an energy audit.



*Other= Transmission & Distribution (Location-Based), Water, Home-working, Wastewater.

Year/Element	Location based
Total number of employees (FTE)	10
Turnover in £ million	1.13
Tonnes of CO_2e	**38.43**
Tonnes of CO_2e per employee	**3.84**
Tonnes of CO_2e per £ million turnover	**34.01**

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Quality Control

Report issue number:	1.0
Date:	13 July 2023
Calculations completed by:	James Fryer
Calculations reviewed by:	Jenny Webb
Report produced by:	James Fryer
Report reviewed by:	Jenny Webb
Director approval:	Dr. Wendy Buckley

1. Introduction

1.1. Company Overview

This report represents the fifth consecutive year of carbon emissions assessment for Newbury Town Council (NTC). Over this period NTC has reduced its absolute emissions year on year by 43.6% since its baseline year of 2018/19 by implementing energy saving and emissions reduction measures. Please see section 4 for a detailed comparison between reporting periods.

1.2. Goals & objectives

- NTC has declared a climate emergency and set an intended reduction target of 10% year on year from its 2018/19 baseline (of its assessed scope 1,2 and 3 emissions).

1.3. Data supplied for the Carbon Footprint Appraisal

A summary of the data supplied by NTC for the appraisal can be provided on request.

1.4. Methodology for the Carbon Footprint Appraisal

The methodology document can be downloaded using this link,
https://www.carbonfootprint.com/docs/carbon_footprint_appraisal_-_methodology_document.pdf

1.5. Abbreviations

A/C	Air Conditioning
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
Defra	Department for Environment, Food and Rural Affairs
EV	Electric Vehicle
GHG	Greenhouse Gas
km	Kilometres
kWh	Kilowatt Hours
T&D	Transmission & Distribution
WTT	Well-To-Tank

2. Calculation Scope and Accuracy

2.1. Scope of this work

Carbon Footprint has assessed the GHG emissions from 1st April 2022 to 31st March 2023 resulting from the energy consumption at NTC's facilities and its business transport activities.

NTC's baseline year data and emissions can be found in the 2018/19 report.

2.2. Organisational & reporting boundaries

Figure 1 shows the full boundaries of the *Greenhouse Gas Protocol Corporate and Value Chain Standards*. The organisation has accounted for all quantified GHG emissions and/or removals from facilities over which it has operational control. This assessment covers the reporting boundaries shown in Table 1, in line with the Greenhouse Gas Protocol Corporate Standard.

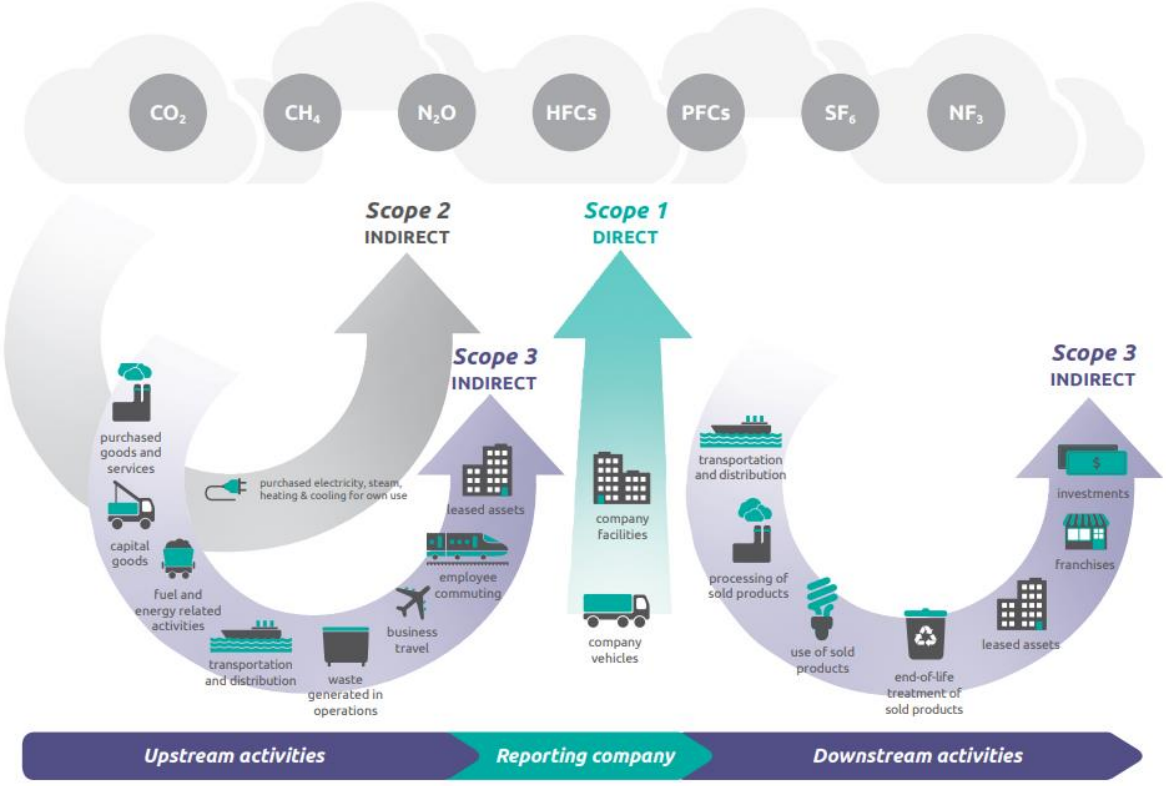


Figure 1: Overview of emissions scopes (GHG Protocol - Scope 3 Calculation Guidance v1.0 - 2013)

Table 1: NTC's GHG Assessment boundary based on the Greenhouse Gas Protocol Corporate Standard

(All green rows have been included in this assessment; all grey rows are not applicable; orange rows have been excluded)

Scope	Activity	Calculation Type	Completion Status	Justification
1	Electricity, heat or steam generated on-site		Not relevant	
1	On-site fuel use		Not relevant	
1	Company owned vehicles		Not relevant	
1	Fugitive emissions (incl. Refrigerant gases and AC)		Not relevant	
2	On-site Consumption of purchased electricity, heat steam and cooling	Activity Data	Complete	
3	1. Purchased goods and services	Activity Data	Partial	Water has been included in this assessment. Additional emissions sources may be relevant.
3	2. Capital goods		Excluded	Not required for the GHG Protocol Corporate Standard
3	3. Fuel- and energy related activities (not included in scope 1 or scope 2)	Activity Data	Partial	Transmission and Distribution is included. Well-To-Tank has not been included.
3	4. Upstream transportation and distribution		Not relevant	
3	5. Waste generated in operation		Excluded	Not required for the GHG Protocol Corporate Standard
3	6. Business travel (not included in scope 1 or scope 2)	Activity Data	Complete	
3	7. Employee commuting	Activity Data	Partial	Homeworking emissions have been assessed.
3	8. Upstream leased assets		Not relevant	
3	9. Downstream transportation and distribution		Not relevant	
3	10. Processing of sold products		Not relevant	
3	11. Use of sold products		Not relevant	
3	12. End-of-life treatment of sold products		Not relevant	
3	13.Downstream leased assets	Activity Data	Complete	
3	14. Franchises		Not relevant	
3	15. Investments		Excluded	Not required for the GHG Protocol Corporate Standard

2.3. Calculation uncertainty assessment & materiality

The result of a carbon footprint calculation varies in accuracy depending on the data set provided. The more accurate the data supplied, the more accurate the final result. Materiality is determined by the percentage contribution of each element to the overall footprint.

Based on the accuracy of the data provided (Table 2), a simple uncertainty analysis has been used to estimate the potential error margin for the appraisal results.

Table 2: Assessment accuracy, materiality and simple error analysis

Emission Source	Data source / comments	Materiality	Uncertainty	Error Margin (tCO_2e)
Electricity (Location-Based)	Meter readings provided (kWh) covering the full assessment period.	Very High (>40%)	1%	0.25
Home-working	Details of home-working hours and occupancy status were provided for all staff.	Low (1-5%)	50%	0.22
Wastewater	Percentage returned as wastewater estimated based on knowledge and previous allocations per site.	Low (1-5%)	50%	0.19
Grey Fleet (employee-owned vehicles)	Vehicle details (engine size and fuel type) were provided along with distance travelled (miles).	Medium (5-20%)	5%	0.14
Natural Gas	Meter readings (m^3) provided covering the full assessment period.	Medium (5-20%)	1%	0.06
Water	Meter readings provided (m^3) covering the full assessment period.	Low (1-5%)	5%	0.04
Victoria Park Kiosk Electricity (Location-Based)	Submeter recharged consumption provided (kWh) covering the full assessment period.	Medium (5-20%)	1%	0.03
Total			**2.4%**	**0.93**

3. Carbon Footprint Results

3.1. Summary of results

The total location-based carbon footprint for NTC for the period ending 31st March 2023 is 46.8 tonnes CO_2e.

Table 3: Results of NTC's carbon footprint assessment by scope and GHG Protocol emission categories

Scope	Emission Source	Location-Based (tCO_2e)
1	Natural Gas	5.97
1	**Scope 1 Total**	**5.97**
2	Electricity	22.53
2	**Scope 2 Total**	**22.53**
3.1	Water	0.88
3.3	Transmission & Distribution	2.35
3.5	Wastewater	0.38
3.6	Grey Fleet (employee-owned vehicles)	2.75
3.7	Home-working	0.44
3.13	Electricity	3.13
3	**Scope 3 Total**	**9.93**
All	**Tonnes of CO_2e**	**38.43**
All	**Tonnes of CO_2e per employee**	**3.84**
All	**Tonnes of CO_2e per £ million turnover**	**34.01**

A full breakdown of emissions by source has been provided in Annex A.

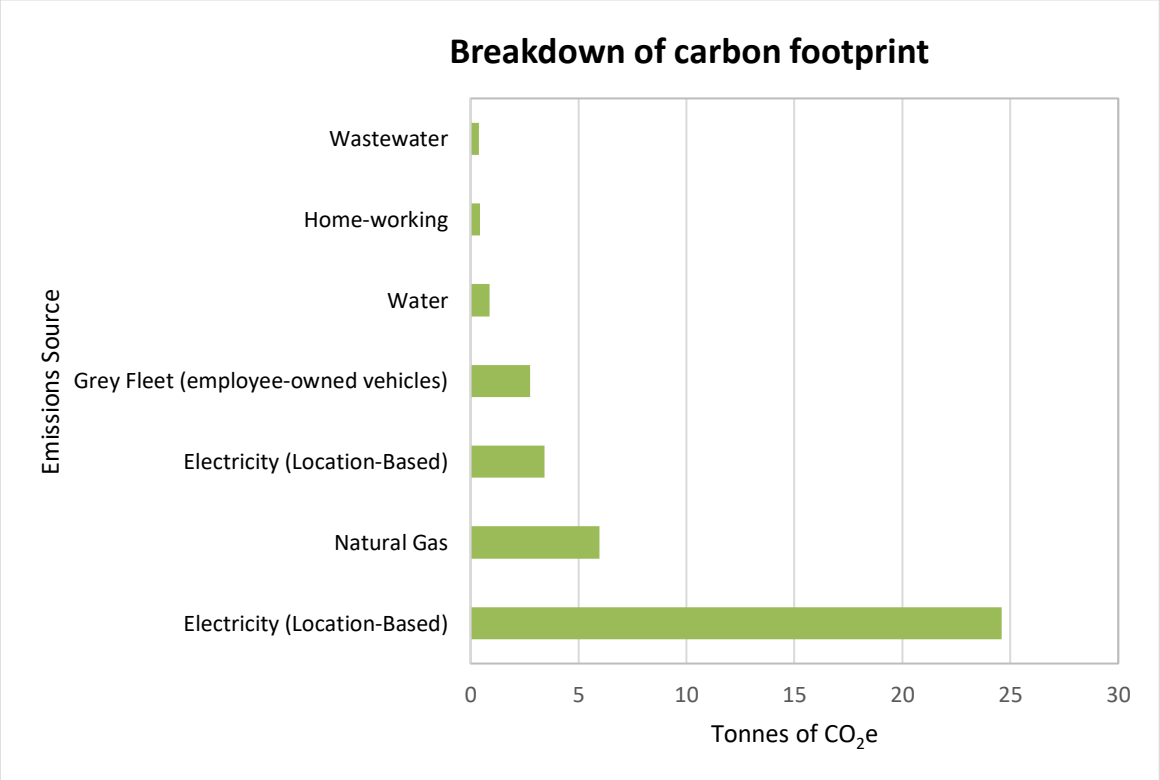
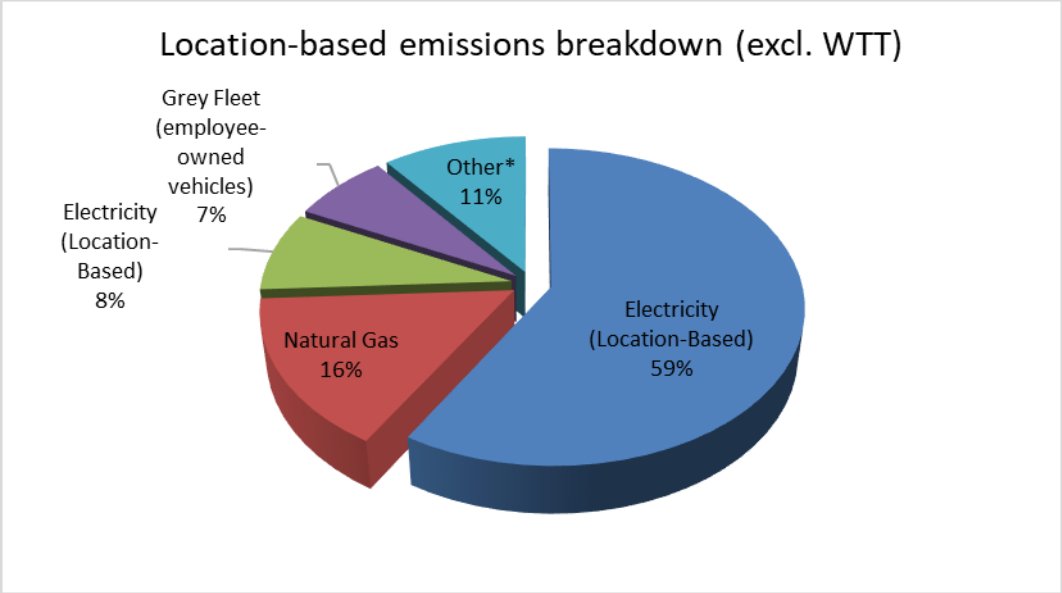


Figure 2: Contribution in tonnes of CO_2e of each element of NTC's carbon footprint



*Other= Transmission & Distribution (Location-Based), Water, Home-working, Wastewater.

Figure 3: Percentage contribution of each element of NTC's market-based carbon footprint

3.2. Emissions from energy usage at site facilities

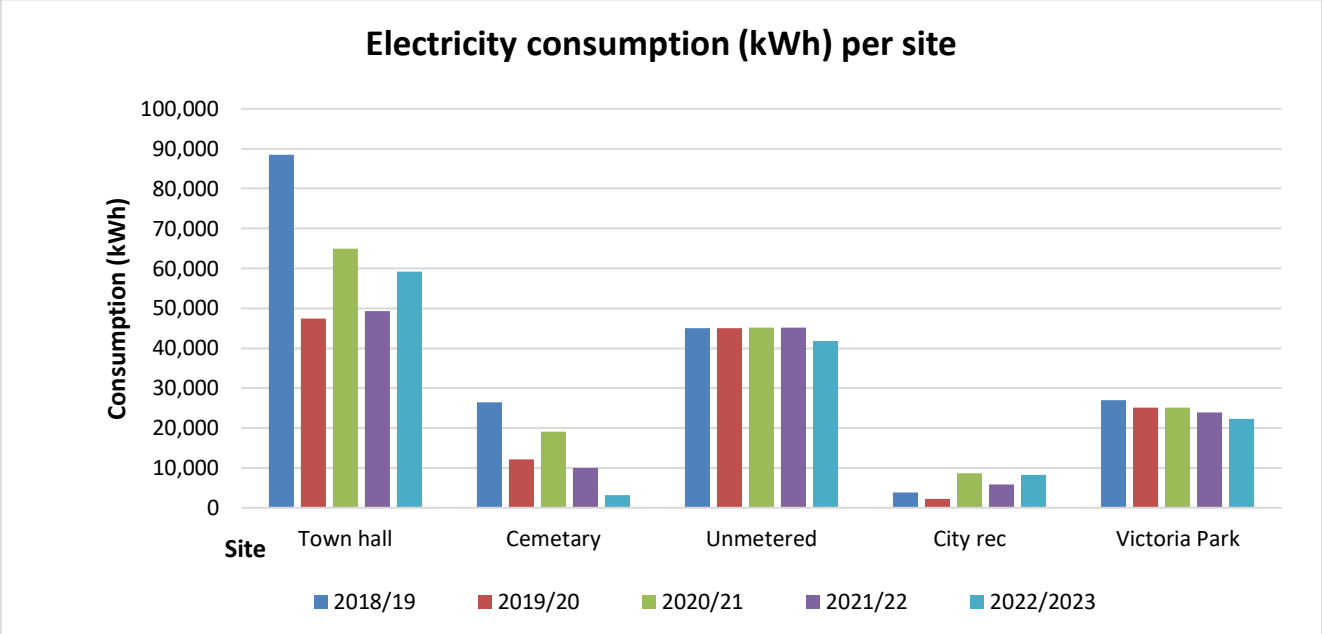
Table 4 shows a breakdown of emissions from each site/location based on electricity and gas consumption.

Table 4: CO_2e emissions as a result of site energy consumption

Name of Site	Location-based Electricity[1] (tCO_2e)	Natural Gas (tCO_2e)	Total[1] (tCO_2e)
Town Hall	8.29	5.97	14.26
Town Hall Night	3.65	-	3.65
Clock Tower	0.55	-	0.55
Band Stand	0.01	-	0.01
Shaw Cemetery	0.47	-	0.47
Victoria Park	3.42	-	3.42
Street Lighting 1	0.73	-	0.73
Street Lighting 2	8.11	-	8.11
Market Pillar 1	0.43	-	0.43
Market Pilar 2	0.42	-	0.42
Wash Common 1	0.82	-	0.82
Wash Common 2	0.78	-	0.78
Newtown RD	0.20	-	0.20
City Rec	0.14	-	0.14
Total	**28.01**	**5.97**	**33.99**

[1]Totals include emissions from Generation and Transmission & Distribution

Figure 4 shows electricity consumption over the 5 years of assessment. Reductions have been achieved in the Town Hall and Cemetery through heating and lighting efficiency improvements (however Town Hall consumption has increased in 2022/2023 due to colder winter weather and increased lettings). Consumption in the city rec has increased slightly due to more frequent training (by 20%) and therefore use of changing rooms and sports pitches. There was a 7.1% decrease in street lighting consumption in 2022/2023 compared to the previous year.



Note: 'Town Hall' includes meters for the following: Town Hall, Town Hall Night, Clock Tower and Band Stand.
'Cemetery' includes: Shaw Cemetery and Newtown RD.
'City rec' includes: Wash Common 1, Wash Common 2 and City Rec.
'Victoria Park (previously Kiosk)' includes: Victoria Park, Market Pillar 1 and Market Pillar 2.

Figure 4: Electricity consumption (kWh) per site

3.3. Emissions from Well to Tank

Well-to-tank emissions relate to the upstream emissions of fuel and energy; accounting for extraction, processing, and transport of fuels/energy. Historically, NTC has not included these associated emissions in reporting. **For this assessment, including WTT emissions would account for an additional 8.39 tCO_2e. NTC could reduce these emissions by reducing fuel and energy usage.**

Table 5: Well-To-Tank CO_2e Emissions breakdown

Emission Source	Location-Based (tCO_2e)
Electricity	5.39
Natural Gas	1.02
Electricity	0.75
Grey Fleet (employee-owned vehicles)	0.67
Transmission & Distribution	0.56
Total	**8.39**

4. Comparison and Benchmarking

4.1. Comparison to base year emissions

Table 6 and Figure 5 below show historical emissions per activity, as well as the total carbon footprint and carbon intensity metrics (tonnes of CO_2e per employee and tonnes of CO_2e per £M turnover).

Overall, absolute emissions have decreased since the baseline year (2018/2019) by 43.5%, with a 5.3% decrease compared to the previous assessment in 2021/22. The most significant progress has come from reductions associated with electricity emissions with a decrease of 58.1%.

The only emission source which has increased since the baseline year is employee-owned car travel. All flights and public transport emissions have been reduced through virtual or online alternatives to previously attended in-person events and trainings.

Table 6: NTC's carbon footprint comparison and percentage change

Element	2018/19	2019/20	2020/21	2021/22	2022/23	% change on baseline year (2018/19)	% change on previous year
Site electricity (Location-based)	58.64	36.61	41.24	29.15	24.59	-58.1%▼	-15.6%▼
Site gas	7.69	5.52	6.24	6.16	5.97	-22.3%▼	-3.1%▼
Vehicle fuel usage	0.00	0.00	0.01	0.01	0.00	n/a	-100.%▼
Employee-owned car travel (grey fleet)	1.17	0.15	0.38	1.35	2.75	134.9%▲	103.9%▲
Bus travel	0.06	0.00	0.00	0.00	0.00	-100.%▼	0%
Taxi travel	0.00	0.00	0.00	0.00	0.00	-100.%▼	0%
Rail travel	0.07	0.03	0.00	0.00	0.00	-100.%▼	0%
Flights	0.49	0.00	0.00	0.00	0.00	-100.%▼	0%
Water (and wastewater)	0.00	0.00	2.71	0.83	1.26	n/a	52.%▲
Home-workers	0.00	0.00	2.12	0.56	0.44	n/a	-22.6%▼
Non-Controlled Site electricity (Location-based)	0.00	0.00	0.00	2.53	3.42	n/a	34.9%▲
Total Tonnes of CO_2e (Location-based)	**68.12**	**42.29**	**52.70**	**40.60**	**38.43**	**-43.6%▼**	**-5.3%▼**
Tonnes of CO_2e per employee	**6.19**	**3.52**	**4.79**	**3.69**	**3.84**	**-37.9%▼**	**4.1%▲**
Tonnes of CO_2e per £ M turnover	**36.92**	**27.11**	**27.88**	**24.17**	**34.01**	**-7.9%▼**	**40.7%▲**

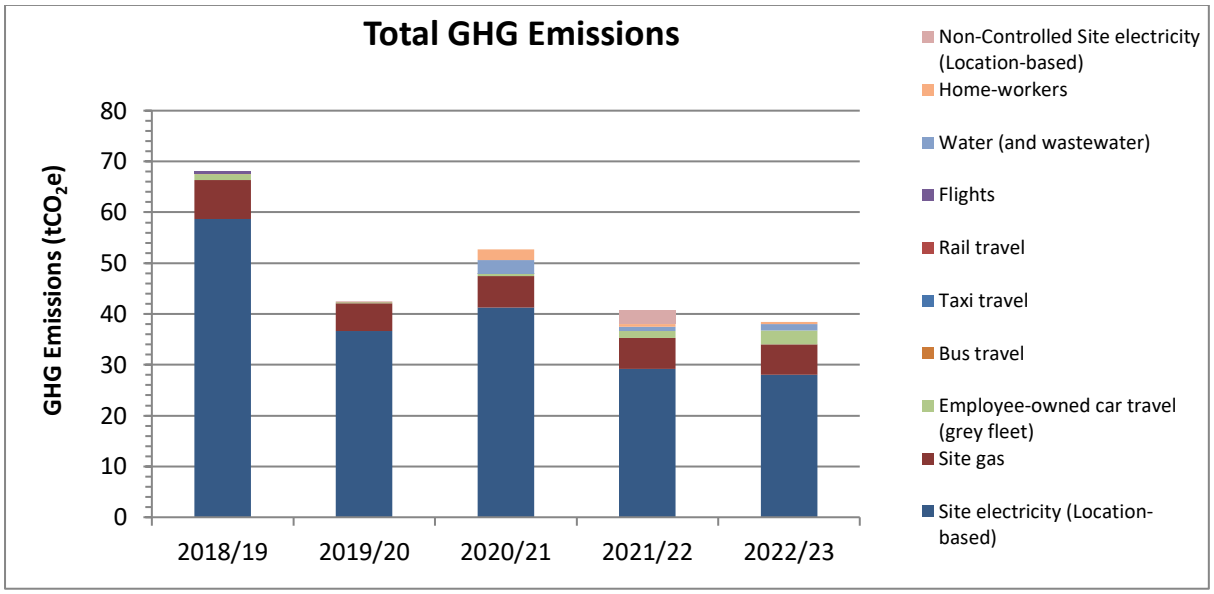


Figure 5: Detailed emissions comparison for the various aspects of NTC's emissions

Benchmarked against employee numbers and company turnover (adjusted for inflation) the carbon emissions statistics show an increase in both intensity metrics since the previous year, although they remain lower than the baseline year of 2018/19. The increase occurs despite lower absolute emissions due to a lower number of employees as well as company (£Million) turnover than in all previous years.

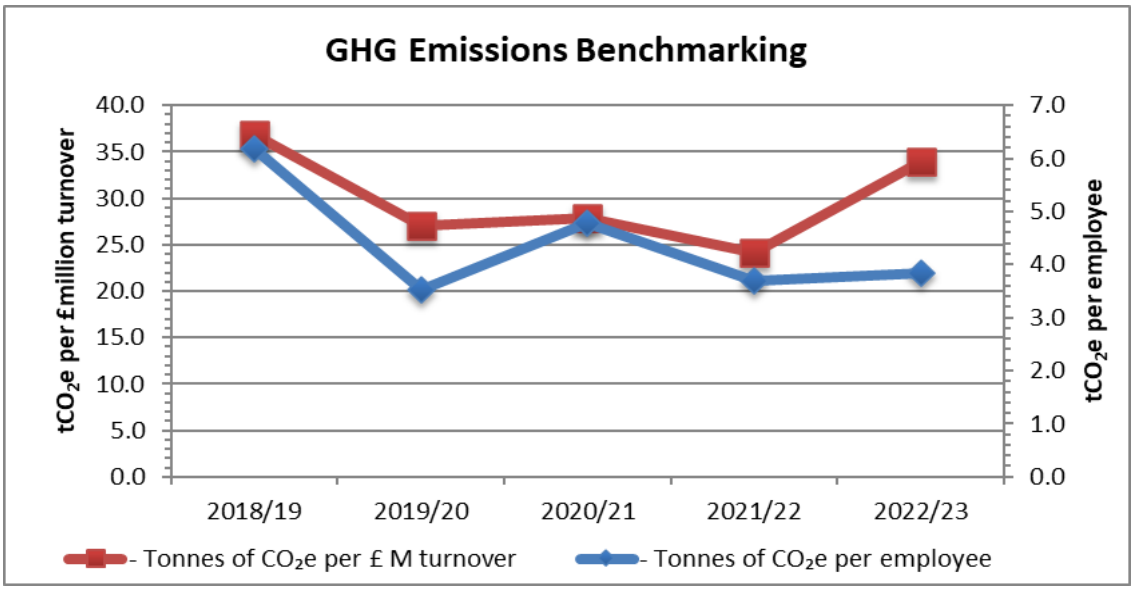


Figure 6: Carbon footprint of NTC for internal benchmarks

Carbon Footprint recommends that organisations use the base-year GHG inventory as a benchmark to measure against. When using the base-year GHG inventory as a benchmark, organisations can set realistic reduction targets and measure their progress year on year. This can also provide excellent marketing opportunities, where real figures can demonstrate your commitment towards helping fight climate change.

4.2. External benchmarking

Companies often find it useful to benchmark themselves against similar organisations in their sector. Carbon Footprint Ltd has an online tool you can use to find publicly available information on other organisations that have reported their emission.

The Carbon Benchmarking Tool is free to use and can be found online at:
https://www.carbonfootprint.com/carbon_benchmark.html

Many companies report Scope 1 & 2 emissions for comparison against others as elements included in Scope 3 can vary greatly. Table 7 summarises the emissions across these Scopes, along with metrics showing emissions per unit turnover and per employee, to help your benchmarking.

Table 7: NTC's benchmarked GHG emissions

Year/Element	Location based
Total number of employees	10
Turnover in £ million	1.13
Tonnes of CO_2e	38.43
Tonnes of CO_2e per employee	3.84
Tonnes of CO_2e per £ million turnover	34.01
Scope 1 & 2 Emissions	
Tonnes of CO_2e	**28.51**
Tonnes of CO_2e per employee	**2.85**
Tonnes of CO_2e per £ million turnover	**25.23**

5. Conclusion

NTC, in conjunction with Carbon Footprint Ltd, has assessed its carbon footprint and has achieved:

- a reduction of 5.33% from the previous year, based on its absolute emissions.
- and shown a reduction of 43.58% from the baseline year, based on its absolute emissions.
- and shown a reduction of 37.94% from the baseline year, based on its emissions per employee.

By achieving this, NTC has qualified to use the Carbon Footprint Standard branding. This can be used on all marketing materials, including website and customer tender documents, to demonstrate your carbon management achievements.

6. Recommendations

6.1. Carbon & sustainability targets

6.1.1. Target setting

NTC should set targets based on per employee and/or per £M turnover, which will account for business growth. Many organisations are now setting targets based on the Science Based Target initiative. Typical targets cover mid-term and longer terms goals such as:

- A 50% reduction in emissions per £M turnover/employee by 2030.
- A 90% reduction in emissions per £M turnover/employee by 2045.

All targets set should be reviewed regularly and amended accordingly (i.e. target increased if it is met ahead of schedule). A clear roadmap for individual emissions sources should be in place. This will ensure the strategy for reducing CO_2e emissions and tracking toward a net zero target is appropriate for the business.

A hyperlink to Carbon Footprint Ltd's whitepaper on target setting can be found below:
https://www.carbonfootprint.com/docs/2021_12_cfp_practical_target_setting_-_white_paper_v10.pdf

6.1.2. Expand the Scope of the Assessment

We recommend that the scope of the assessment is expanded in future to include the aspects that are identified as excluded in Table 1.

6.1.3. Improving the accuracy of future carbon footprint assessments

The overall accuracy is excellent with an estimated overall error margin of +/- 0.93 tCO_2e, which represents +/- 2.4% of the total emissions.

6.2. Reducing emissions

To reduce GHG emissions, we recommend the following:

- Offset the calculated footprint to maintain the 'Carbon Neutral Organisation' certification.
- The most significant option to reduce emissions would be to switch all electricity supply to 100% renewable tariffs to reduce emissions associated with electricity use (65% of total emissions). Many "green" electricity tariffs are now the same price as the traditional brown tariffs. Once you have done this you will be able to report your market-based emissions alongside your location based.
- Evaluate the business case for installing additional renewable energy generation. Investigate hydrological options as well as additional solar photovoltaic (PV) panels (the business case for these may be far stronger given rising energy prices)
- Investigate swapping owned sites from gas-powered heating to sustainable alternatives such as electric, hydrogen, solar thermal, and air-source heat pumps.
- Increase the thermal insulation of owned buildings to reduce heating energy consumption such as fiberglass and cavity wall insulation, double glazing, and draft excluders
- Consider including emissions associated with Well-To-Tank to widen the scope of next year's assessment.
- Communicate targets and actions to employees, customers and other stakeholders.

6.3. Carbon offsetting

Carbon offsetting is a pragmatic way to compensate for the emissions that you cannot reduce, by funding an equivalent carbon dioxide saving elsewhere. We note that Science Based Targets supports this as what they call Beyond Value Chain Mitigation (BVCM) and that it provides an urgently needed way for companies to cut emissions outside of their value chains in line with societal net-zero (see link - Net-Zero: Urgent Beyond Value Chain Mitigation Is Essential - Science Based Targets**).**

We can provide both UK-based and international projects for you to support. The majority of projects focus on the development of renewable energy in developing countries, however there are others which have a greater focus on social benefits as well as environmental benefits. Further detail on the type and specific projects that we currently have in our portfolio can be provided on request or be found at: http://www.carbonfootprint.com/carbonoffsetprojects.html.

The cost of offsetting has reduced considerably over recent times. This could be readily funded via an internal carbon pricing system.

Example of Carbon Offsetting Projects:



Annex A

A full breakdown of NTC's emission sources is given below. This aligns with the GHG Protocol classification methodology and provides each associated emission source:

Scope	GHG Protocol Emission Category	Emission Source	Location-Based (tCO_2e)
1	On-site fuel use	Natural Gas	5.97
Scope 1 Total			**5.97**
2	On-site Consumption of purchased electricity, heat steam and cooling	Electricity	22.53
Scope 2 Total			**22.53**
3.1	1. Purchased goods and services	Water	0.88
3.3	3. Fuel- and energy related activities (not included in scope 1 or scope 2)	Transmission & Distribution	2.35
3.5	5. Waste generated in operation	Wastewater	0.38
3.6	6. Business travel (not included in scope 1 or scope 2)	Grey Fleet (employee-owned vehicles)	2.75
3.7	7. Employee commuting	Home-working	0.44
3.13	13.Downstream leased assets	Electricity	3.13
Scope 3 Total			**9.93**
All	**Tonnes of CO_2e**		**38.43**
	Tonnes of CO_2e per employee		**3.84**
	Tonnes of CO_2e per £ million turnover		**34.01**