

Haworth Tompkins Carbon Footprint Report 2021

HT Carbon Footprint Report 2021

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HT Carbon footprint report 2021

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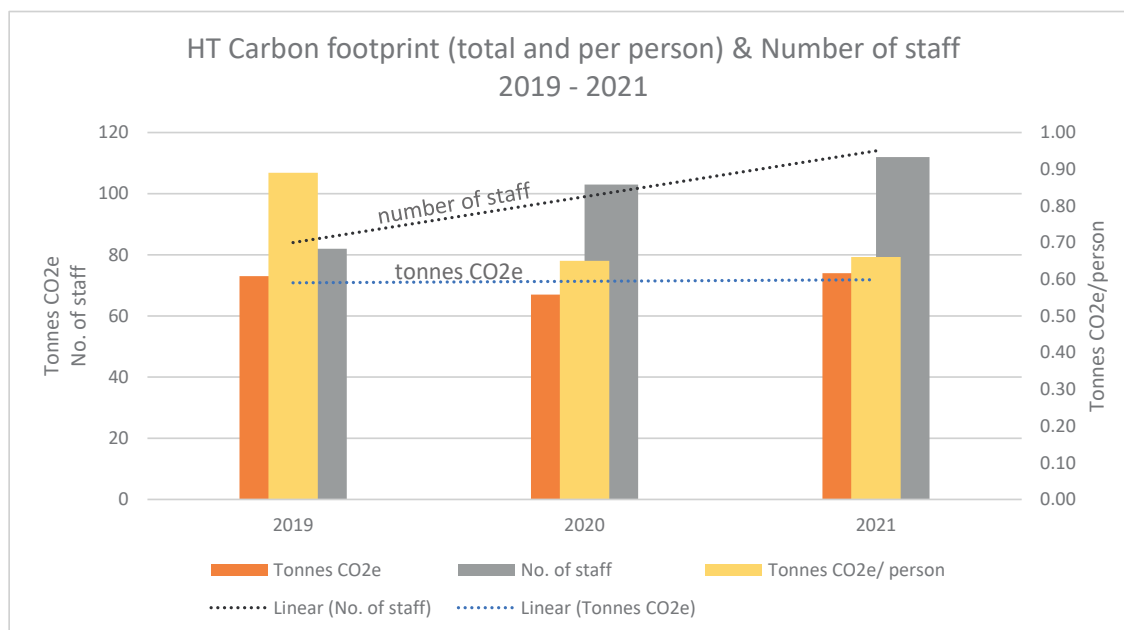
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Executive summary

Haworth Tompkins have been monitoring and recording their business impact by measuring their office carbon footprint since 2019. As a practice, HT endeavour to reduce their environmental impact both as a business and through their design work, as founding signatories of the Architects Declare movement. Haworth Tompkins have signed up to the **Race to Zero challenge via the SME Climate Hub** (<https://smeclimatehub.org/sme-climate-commitment/>), aiming to halve their GHG emissions by 2030 compared to the 2019 baseline, offset annually the remaining emissions through efficient measures, and achieve net zero emissions before 2050.

The office carbon footprint during April 2021/April 2022 is estimated at 74 tonnes CO₂e, or approx. 0.66 tonnes CO₂e/person, which compares with 67 tonnes CO₂e (0.65 tonnes CO₂e/person) the previous year, and 73 tonnes CO₂e (0.9t per person) in 2019 (pre-pandemic). Staff numbers have increased by almost 40% since 2019.



HT Office carbon footprint: tonnes CO₂e, tonnes CO₂e/person, and no. of staff, 2019 to 2021

Haworth Tompkins

No. of employees 2021/2022 (average): 112

Governance: Employee Ownership Trust (EOT)

Environmental reporting:

Design work targets: START Toolkit

Business operations impact: HT Office Carbon Footprint

Reporting Period: April 2021 - April 2022

This report reflects the operations of HT London premises, Greenwood Place (GWP) and Holmes Road (HR).

The office carbon footprint during April 2021/April 2022 is estimated at 74 tonnes CO₂e, or approx. 0.66 tonnes CO₂e/person.

This 2021/2022 Office carbon footprint analysis includes:

- Scope 1 emissions: gas;
- Scope 2 emissions: electricity;
- Scope 3 emissions: water use, project related transport and couriers, staff commuting, staff home working, model-making deliveries, transmission & distribution losses, and 'well to tank' emissions linked to the supply of electricity and gas used in the office.

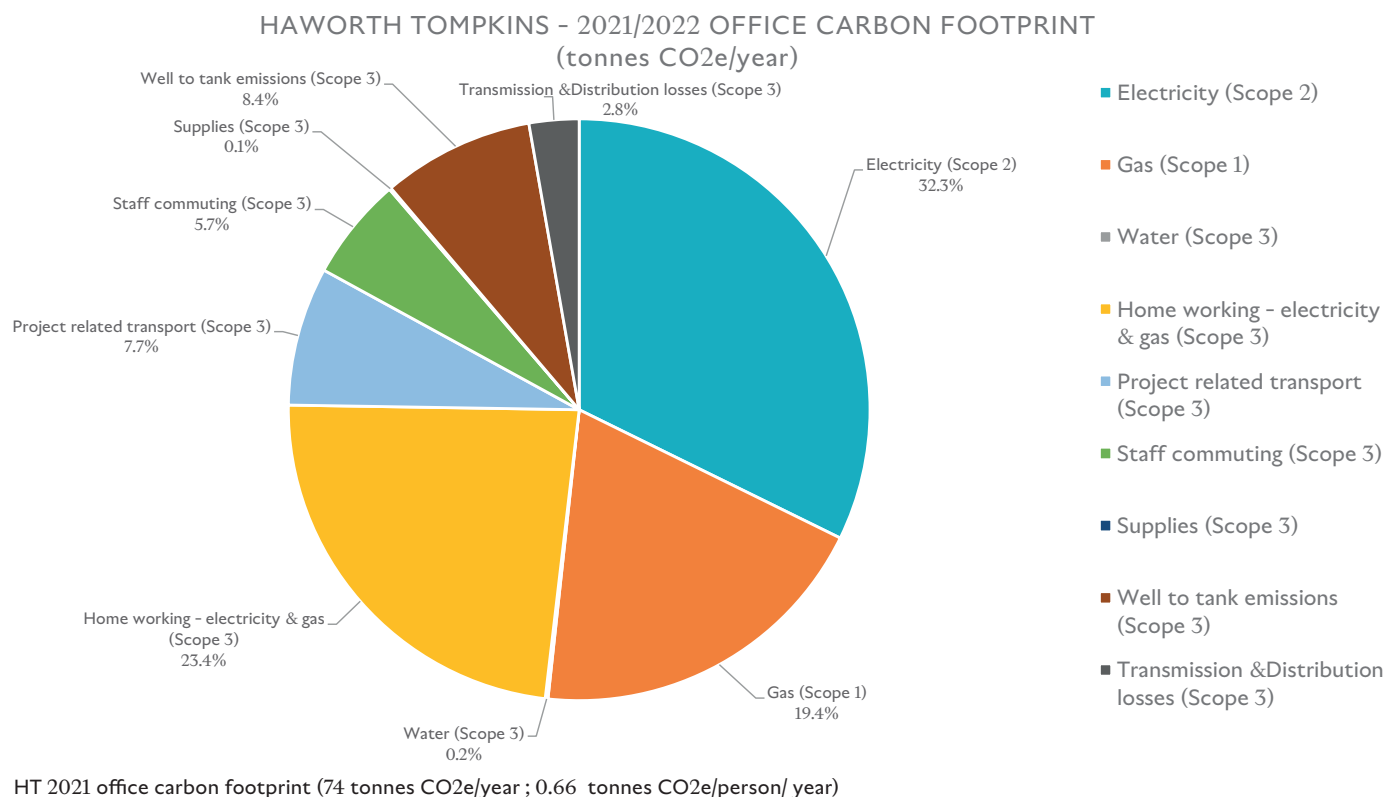
Executive summary

The aims of this report are:

- to identify the activities related to the majority of greenhouse gas emissions (GHG) linked to running the business operations, expressed in tonnes CO₂e emitted between 5th April 2021 and 5th April 2022.
- to present possible solutions to reduce the GHG emissions and commit to achieve a significant reduction by 2030, compared to the 2019 baseline, along the lines of our *Race to Zero* commitments
- recommend ways to offset the GHG emissions emitted in 2020 in a way that is meaningful for the environment.

Key findings:

- the largest proportion of emissions are linked to electricity use, gas use, home working and project-related travel
- there are several changes compared to the previous report (April 2020/April 2021), reflecting the adjustments to working conditions post pandemic:
 - increased carbon emissions linked to project related travel, with several flights during this period
 - carbon emissions linked to home working have reduced slightly
 - carbon emissions related to staff commuting have increased as staff return to office at the end of 2021.



A. Introduction

Emergency response

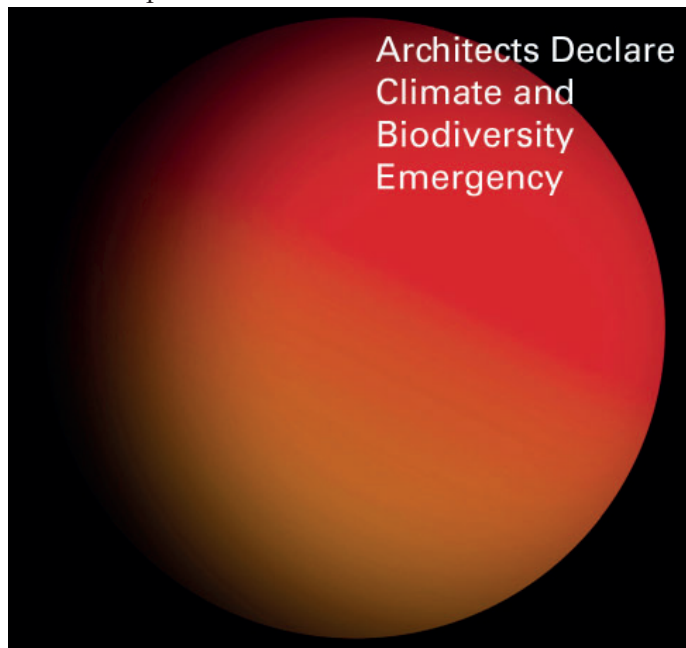
The Architects Declare Climate and Biodiversity Emergency movement launched in 2019 acknowledges the impact of the construction industry on global climate and biodiversity. The AD declaration sets out a list of goals to minimise carbon emissions in the built environment.

As founding members of this movement, Haworth Tompkins are committed to acting now to reduce their carbon emissions both through the projects they design, and the way the business operates.

Office carbon footprint

HT started an annual process of calculating the office carbon footprint¹ in 2019, to become more aware of its impact on the environment.

The current report covers the operations of HT's two London premises, Greenwood Place (GWP) and Holmes Road (HR), between 5th April 2021 and 5th April 2022. The goal is to become more aware of the carbon emissions that arise from operating the business, and to find ways to improve this and minimise the office carbon footprint.



[1]

<https://www.haworthtompkins.com/studio/regenerative-design/our-carbon-footprint-report-2019>

<https://www.haworthtompkins.com/studio/regenerative-design/our-carbon-footprint-report-2020>

A. Introduction

Location and premises

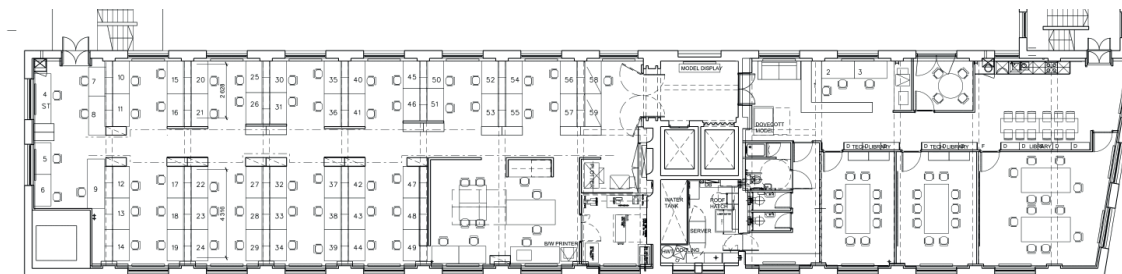
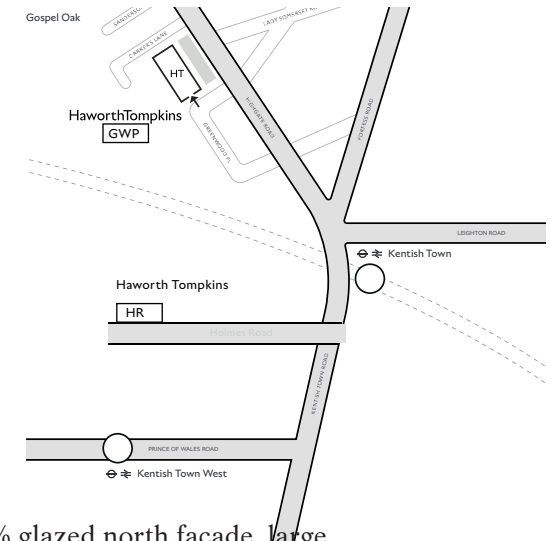
HT operates across two premises: Greenwood Place (GWP) - main office, and the Holmes Rd (HR) office. Both are included in this analysis. HT have been assessing options to bring all staff together in one location.

Greenwood Place (GWP)

- Former industrial building
- Entire 5th floor of a GF+5 storey building
- 513m2 GIA
- Gas fired boiler with radiators; utilities included in rent, no control over utilities suppliers
- Natural ventilation via windows (single glazed, metal frame)
- Uninsulated solid brick walls, except the west facing wall which is internally insulated

Holmes Road (HR)

- Recent build
- Ground floor office with residential accommodation above.
- 205m2 GIA
- Gas fire boiler with underfloor heating; utilities included in rent, no control over utilities suppliers
- Natural ventilation through a couple of high level openable windows (double glazed with Alu frames); almost 100% glazed north facade, large % glazing on South East facade
- Overheating in summer can require localised fans and floor standing purifier units at times. Passive or low energy ventilation solutions are required as introducing air conditioning in the near future would increase the carbon footprint of the office.



Greenwood Place office plan (GWP)



Holmes Road office plan (HR)

B1. HT office carbon footprint

The analysis shows that the main sources of greenhouse gas (GHG) emissions, expressed in CO2 equivalent (CO2e), between April 2021/April 2022 were:

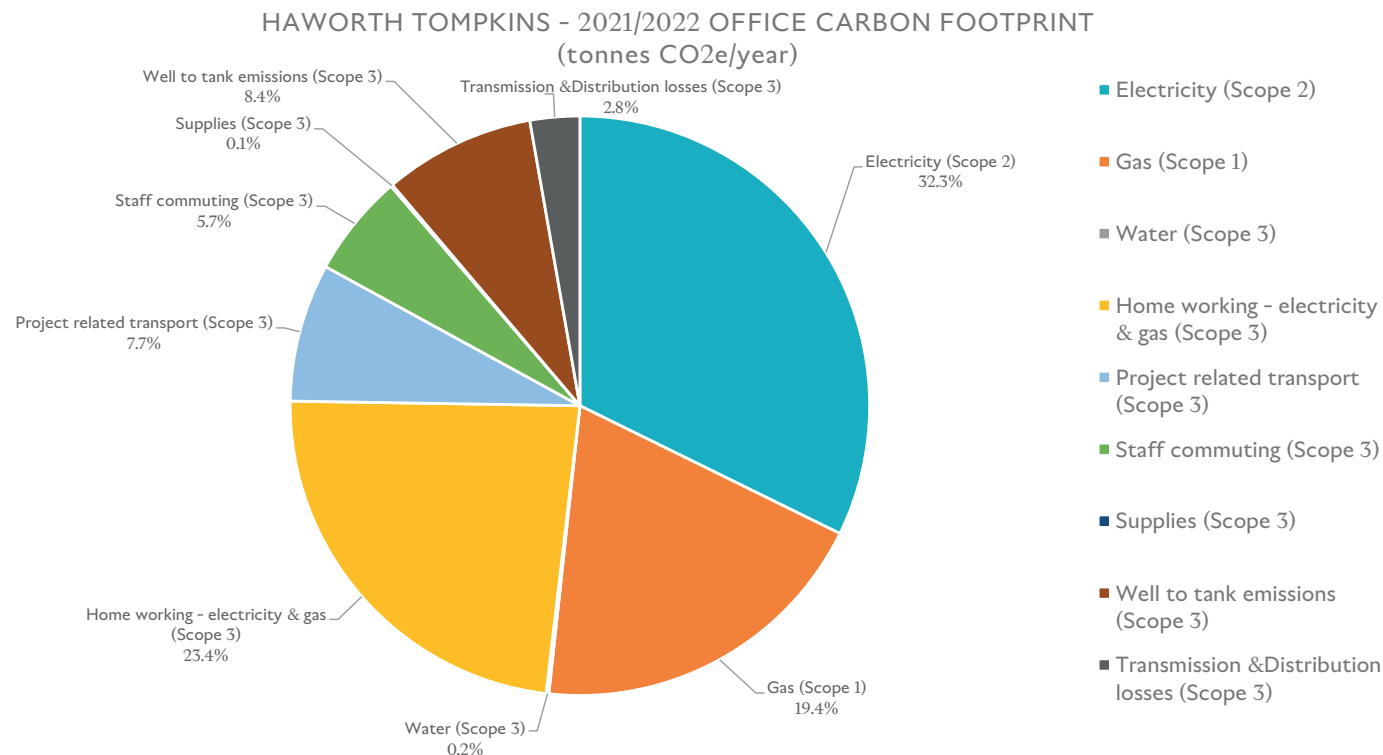
- **electricity use**

- **gas use**

- **home working** (electricity and heating, based on number of employees and **using average estimates**: <https://bulb.co.uk/blog/how-to-measure-the-carbon-impact-of-working-from-home>)

- **project related transport** (including flights)

Other areas of impact on carbon emissions are staff commuting and 'well to tank' emissions linked to the supply of electricity and gas used in the office.



The report includes a period of hybrid working after the COVID-19 pandemic, with significant changes to the pattern of work and practice operations:

- increased commuting to the office

- the introduction of compulsory attendance in the office (since autumn 2021)

- reduction in those remote working via connection to computers in the office

- an increase in project-related commuting, including several flights

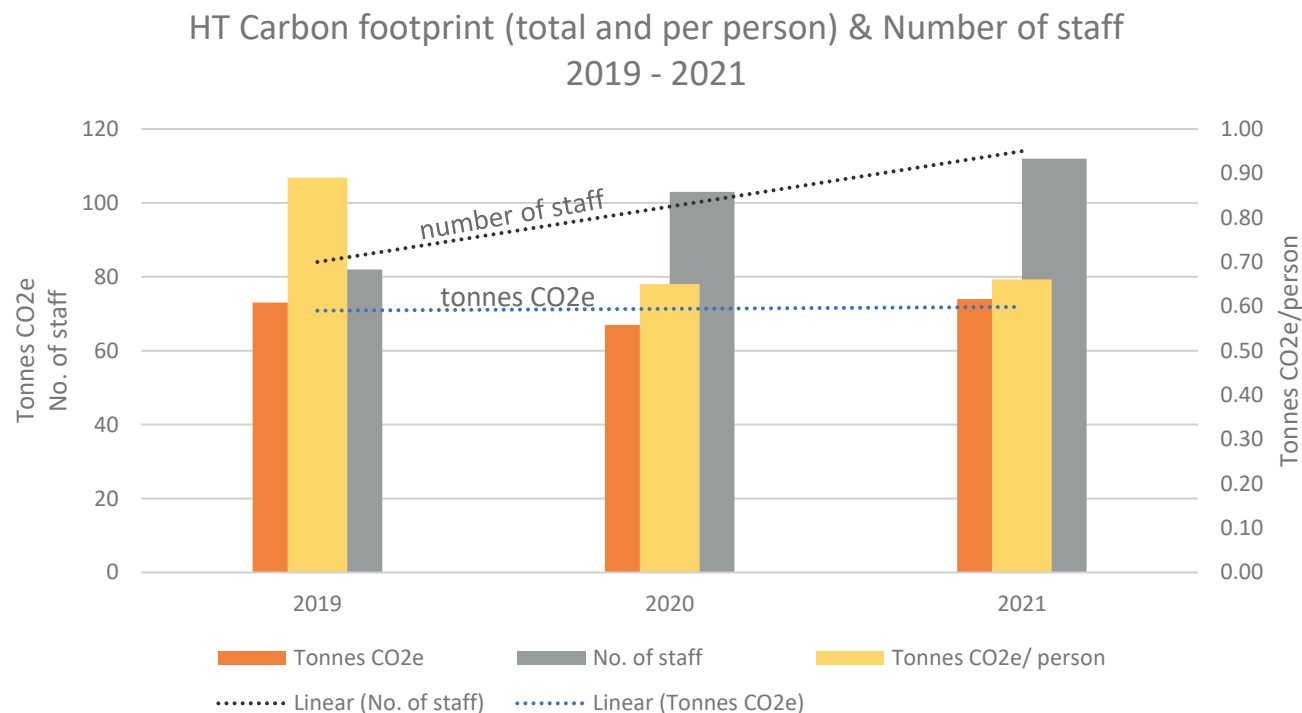
HT 2021 office carbon footprint (74 tonnes CO2e/year ; 0.66 tonnes CO2e/person/ year)

B1. HT office carbon footprint

A comparison with the carbon footprint of previous years (both absolute numbers and carbon emissions per person employed) reflects the changes since 2019:

- staff numbers have increased by almost 40% since 2019
- significantly lower carbon emissions per person (in yellow below) compared to 2019
- comparable total carbon emissions to 2019 (in orange below).

A detailed analysis of sources of carbon emissions between 2019, 2020 and 2021 is shown on next pages.



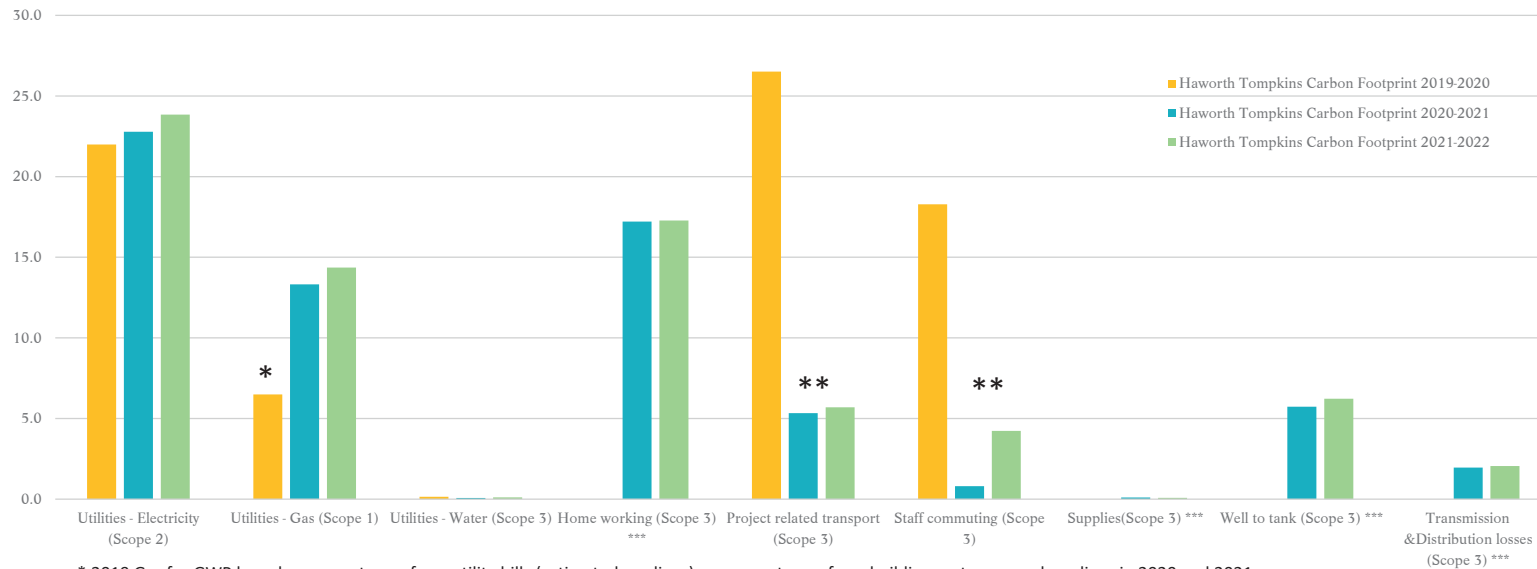
HT Office carbon footprint: tonnes CO2e, tonnes CO2e/person, and number of staff, 2019 to 2021

B1. HT office carbon footprint

A detailed analysis of carbon emissions between 2019 - 2021 reflect the work patterns before and after the pandemic, and improved data available year on year:

- **Electricity: energy use and carbon emissions increased in absolute numbers** (more staff and computers in the office, 2 new RDS servers which are on 24h/7days, but also all machines are being shut down at 1am to ensure electricity savings, since autumn 2021)
- **Gas: slightly increased to the previous year** as staff started to return to the office during the autumn/winter of 2021; data for 2019 based on estimated readings- (see note on chart below)
- Home working: not applicable for the 2019 analysis, and estimated afterwards based on rough estimates and new hybrid working patterns
- Project related travel: decreased significantly since 2019, however seems to be increasing again in 2021
- Staff commuting: more difficult to assess in the past year as the new hybrid working patterns were just adopted gradually since autumn 2021
- More detail added to the calculation (supplies deliveries, 'well to tank' emissions and transmission and distribution losses linked to energy supplied to the office)

HAWORTH TOMPKINS OFFICE CARBON FOOTPRINT COMPARISON
2019/2020 - 2020/2021 - 2021/2022 (tonnes CO₂e/year)



* 2019 Gas for GWP based on pro-rata use from utility bills (estimated readings), vs. pro-rata use from building meter manual readings in 2020 and 2021

** Difference reflects absence of flights, other project travel, and reduced staff commuting in pandemic years (2020 and most of 2021)

*** Not included in 2019 calculation

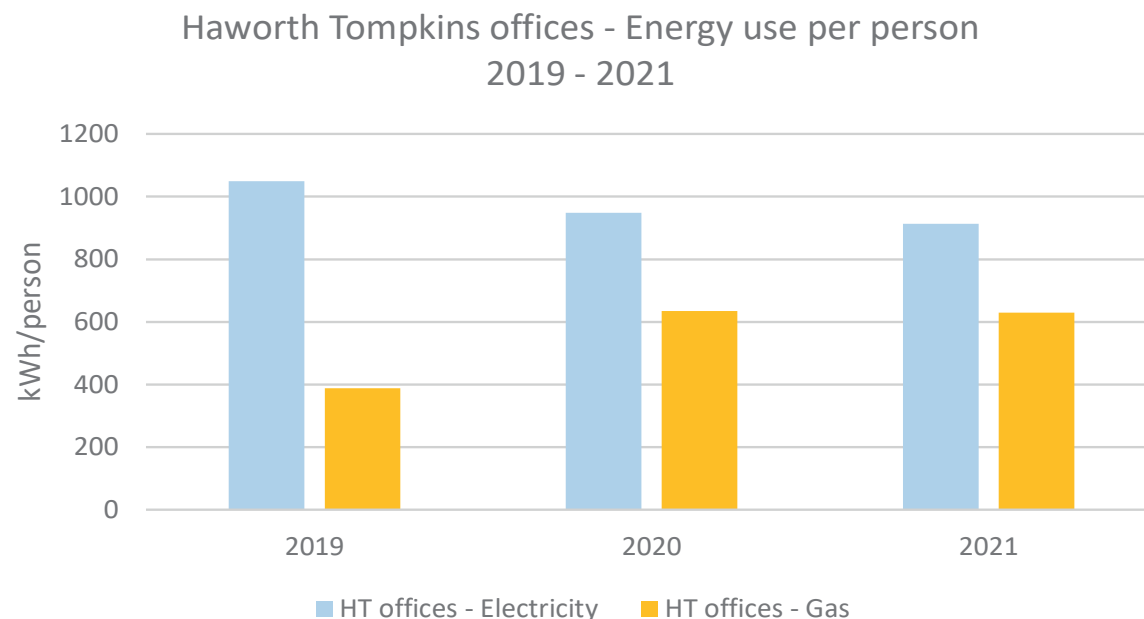
Staff numbers increased by almost 40% from 2019 to 2021

Comparison between HT office carbon footprint 2019 vs 2020 vs 2021

B2. Office energy use

A closer look at the **energy use per person per year (kWh/person.yr)** for the entire practice (both offices), shows that:

- the gas consumption **per person has increased since 2019**
 - the data available for the GWP office was based on bills (estimated readings); subsequently the data was based on manual readings (building gas meter), pro-rata for 1 floor
 - more people physically in the office means more free heat gains
 - partial return to work from the office in the autumn/winter of 2021 - less people in the office means smaller internal heat gains and the need for heating to be on to compensate cold surfaces (e.g. uninsulated walls - GWP, or large north facing glazing - HR)
- the electricity consumption **per person has decreased since 2019, as the number of staff has increased by 40% since 2019.**
 - it is linked with accommodating more staff in terms of IT equipment, **while in absolute numbers the electricity use has increased**
 - also linked to the fact that working from home means reduced electricity use in the office, per person



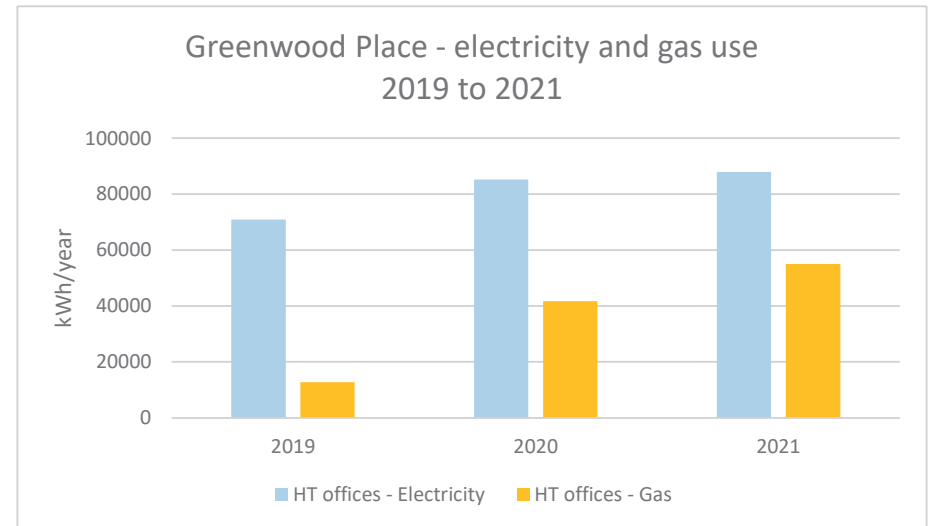
HT office energy use per person - 2019 to 2021

B2. Office energy use

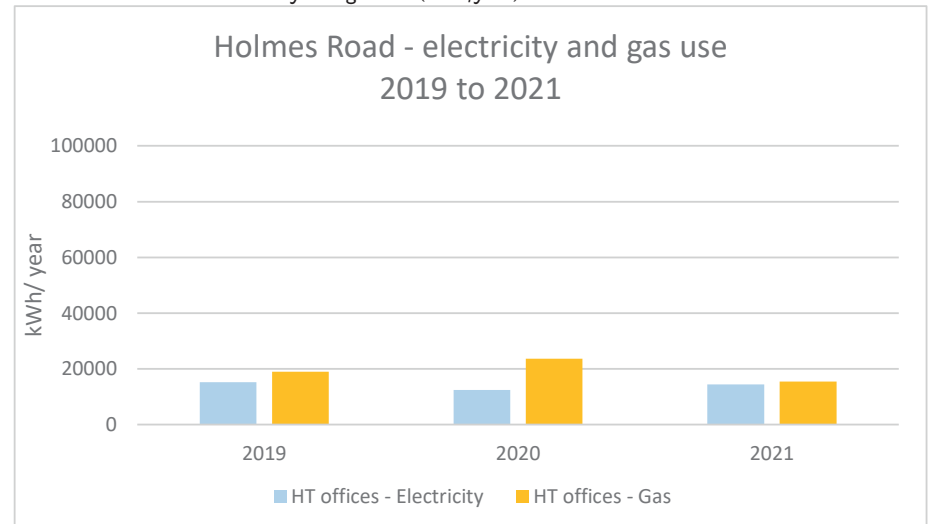
In absolute numbers (**kWh/year**), electricity and gas use in the 2 offices over the last 3 years show:

- an increase in electricity use in GWP due to more IT equipment - this is due to more staff (40% increase in staff numbers, and computers staying on for longer for remote working logging in)
- increased gas use in GWP, especially in 2021 with slow return to the office since autumn/winter 2021 (2019 data is based on pro-rata use from bills - estimated readings - therefore not reliable data)
- relatively low electricity use in HR by comparison to GWP (shows lower occupancy than GWP)
- relatively constant gas use in HR (the increase in 2020 is assumed to be linked to the thermostat left on during the 1st lockdown)

The energy use is quite different in the 2 offices: this reflects both different office size (GWP more than double the size of the HR office), occupancy levels, internal heat gains from people and equipment, and different fabric performance (HR newer build, while GWP is a former industrial building in need of a deep retrofit)



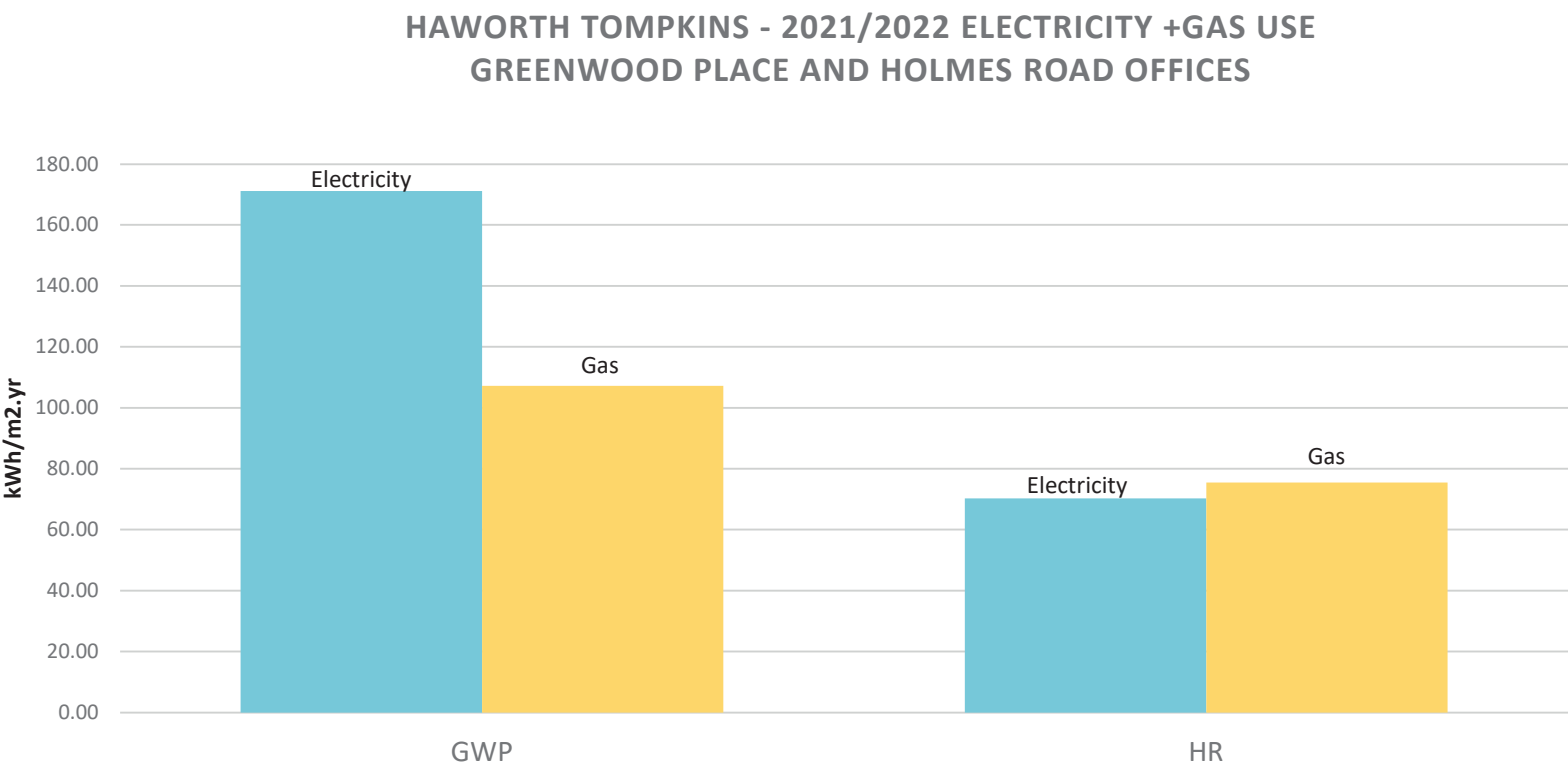
Greenwood Place - electricity and gas use (kWh/year) - 2019 - 2021



Holmes Road - electricity and gas use (kWh/year) - 2019 - 2021

B2. Office energy use

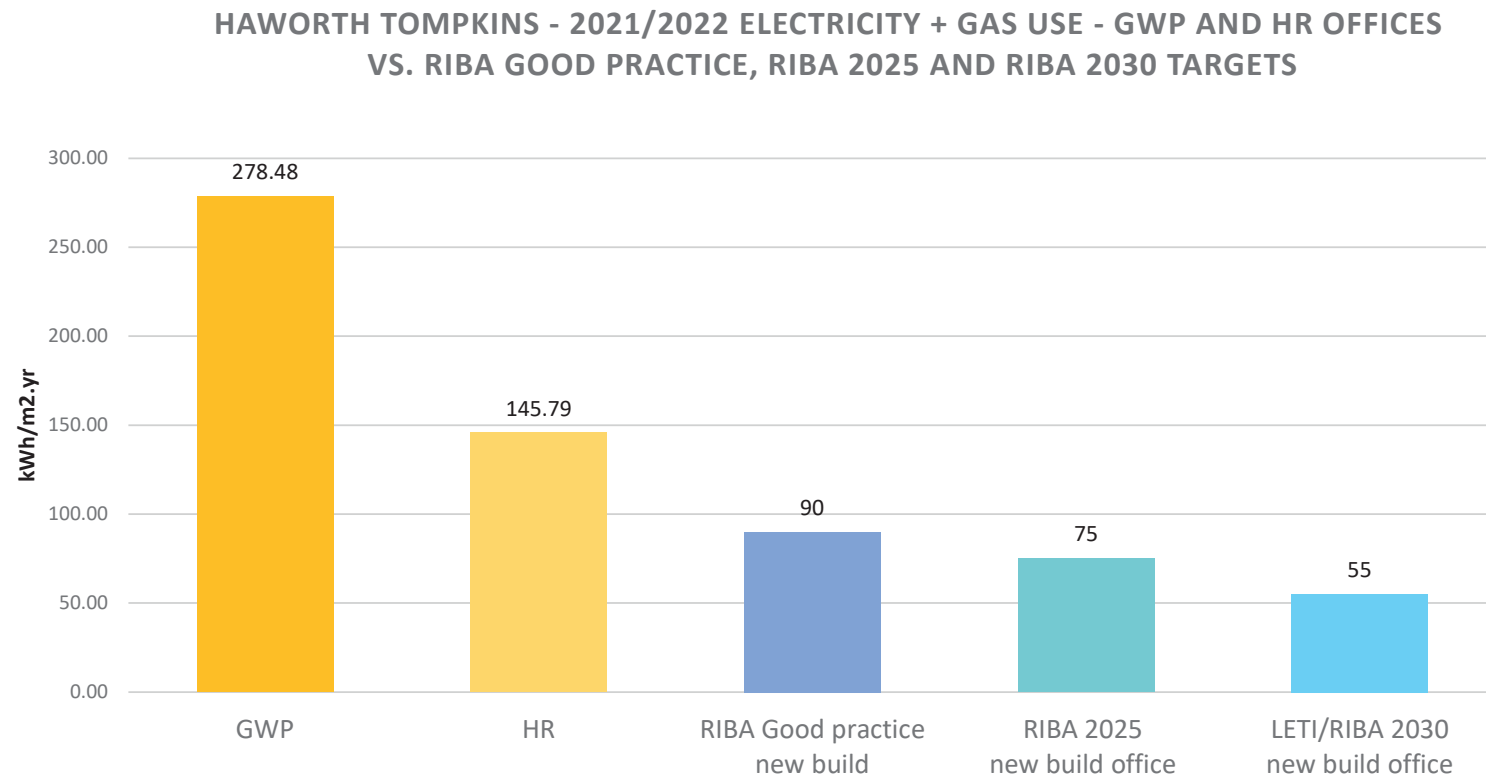
The **total energy use in kWh/m2** detailed per office and source of energy (electricity and gas) for the reporting year shows a higher energy intensity in Greenwood Place compared to Holmes road, per sqm. This reflects different occupancy and fabric efficiency of the 2 offices.



HT offices energy use intensity (kWh/m2.year) April 2021-April 2022: electricity and gas

B2. Office energy use

A comparison between current HT offices yearly energy use per sqm and the energy performance targets for new build offices shows the need to engage in a practice-wide conversation regarding the deep refurbishment of current premises, or moving to a new build location, in order to reduce the overall office energy use and GHG emissions linked to that.



HT offices energy use (kWh/m2.yr) compared to current design targets for new build offices

C. Reduction measures and Climate Action Plan: Race to Zero

Haworth Tompkins have signed up to the ***Race to Zero challenge via the SME Climate Hub*** (<https://smeclimatehub.org/sme-climate-commitment/>), aiming to:

- **halve its GHG emissions by 2030** compared to the 2019 baseline, and offset annually the remaining emissions through efficient measures,
- **achieve net zero emissions before 2050, and**
- **disclose the progress made on a yearly basis**

The HT Climate Action Plan included in last year's report and further detailed below focuses on the key elements that have the largest impact on the office carbon emissions (utilities and project related travel - especially flights).

A detailed analysis on utilities and office premises is included in next pages of this report.

HT Climate Action Plan

Office carbon emission reduction measures will focus on:

- 1. Electricity** - exploring a more energy efficient IT system if feasible (e.g. cloud server) & lighting in current premises, or new efficient fittings in new premises
- 2. Flights** - a business decision is needed to target a maximum number of annual economy flights for international projects
- 3. Heating** - closely linked with improvements to the office building fabric & services (linked to the current discussions regarding the option to retrofit the existing GWP offices, or move to new premises; for retrofit, the focus is on improvements to windows, wall insulation, introducing heat recovery ventilation and fossil fuel free heating)
- 4. Staff commuting** by actively supporting and encouraging green options

A business decision on maximum number of annual international flights and on office premises will be key in reaching the proposed GHG emissions reduction targets, as well as significantly improving existing premises, or finding energy efficient new office space.

The carbon emissions reduction measures recommended in this report refer to the 2019/2020 baseline, however reflect the current working patterns (partly work from home, partly work in the office, for the majority of staff, with more project-related travel than the previous year).

The SME Climate Commitment

Recognising that climate change poses a threat to the economy, nature and society-at-large, our company commits to take action immediately in order to:

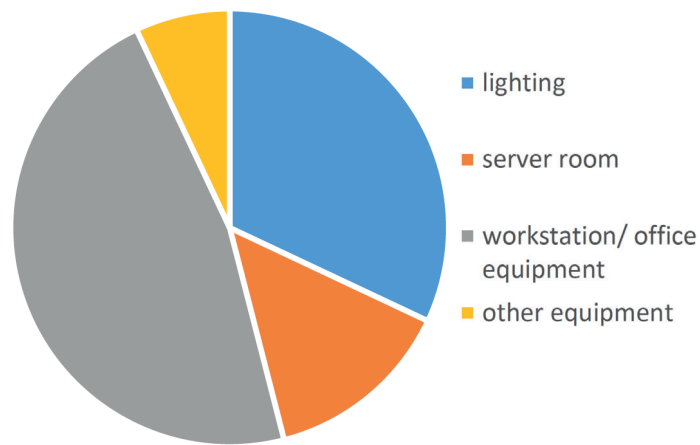
- 1. Halve our greenhouse gas emissions before 2030**
- 2. Achieve net zero emissions before 2050**
- 3. Disclose our progress on a yearly basis**

In doing so, we are proud to be recognised by the United Nations Race to Zero campaign, and join governments, businesses, cities, regions, and universities around the world that share the same mission.

Race to Zero - SME Climate Hub Commitment

C. Reduction measures and Climate Action Plan: Race to Zero

1. Electricity use



Mesh Energy Audit, energy usage in the Greenwood Place office, 2018

There is a high electricity demand for computers & IT equipment. Improvements made in the last year meant that computers can be turned off remotely daily and back on the next day. At the same time, increased numbers of staff and hybrid working means more energy use by IT equipment compared to the 2019 baseline.

Switching from the current fluorescent lighting to LED fittings has been delayed until a decision was made regarding the office premises.

The following possible carbon reduction measures have been identified:

- **Changing all light fittings to LED in both offices if a decision is made to remain in current premises** (an independent energy audit report carried out by Mesh energy has identified that behavioural changes and installing LED light fittings at GWP could reduce the energy consumption by 25% and more¹. Same changes at HR would also offer significant reductions.) [1] 'Potential savings of 25% through operational changes, and further savings through lighting upgrades'. MESH, Energy Audit Report, January 2018
- GWP - engage other tenants and ask the landlord to switch to green supplier of electricity.
- HR - investigate potential for secure night time/early morning purging of exposed concrete thermal mass in the summer & cross ventilation

2. Flights

HT has increasingly taken on more international projects. However, 2020 has shown that effective communication with local architects and clients can be carried out via remote technology. There still remains a need for the HT project team to see the site and meet the local team in person therefore, moving forward, the following **possible carbon reduction measures have been identified and recommended to help reach the Race to Zero commitments**:

- **Recommendation to limit the number of annual flights (economy travel only) for international projects as below, (rest of travel by e.g. train & ferry):**
- It is recommended that at practice level there are no more than a maximum two long haul return flights plus a maximum of two short haul return flights per year, or a combination of alternative travel options leading to similar annual carbon emissions to the above - in order to reach our carbon reduction commitments.
- Improve and use remote collaboration technology in the office to avoid travel, for instance online conference calls
 - Diversify sectors to expand UK/ local projects
 - Setup local office for duration of long international projects, improve collaboration with local architects

C. Reduction measures and Climate Action Plan: Race to Zero

3. Gas

Both premises are currently heated by gas fired boilers. Effective measures to reduce or eliminate the gas usage would depend on whether the practice remains in current premises for the long term and all design teams moved to GWP. If so, a refurbishment of the building fabric should be discussed with the landlord in Greenwood Place, in order to achieve the GHG emissions savings envisaged by the Race to Zero commitments.

A deep retrofit of existing premises in GWP,(and an additional floor), alongside a heat recovery ventilation system would help reduce the need for heating and would allow the practice to switch to a fossil fuel - free system (heat pumps) in the near future.

If a decision is made to move to new premises, an energy efficient new office with a fossil fuel- free heating system (heat pumps) would be recommended.

4. Commuting (bus, trains, bicycle)

As staff commuting has again increased post-pandemic (though at lower levels due to part home-working conditions), support and encouragement to take up greener commuting options should be considered:

- **Encourage staff to switch from more carbon intensive travel options to bicycles/electric bicycles via the cycle to work scheme and by providing office electric folding bikes (can be used for commuting and for attending project meetings in London during working hours)**
- **HR - Consider providing access to showers**
- GP – discuss with the landlords the possibility to install an electric bike charging point in the parking area
- Let all new staff know there are loans and salary sacrifice options available for travel cards to make them more affordable
- Office electric car share

The long term goal would be for green transport to become the majority for commuting.

Below are identified improvements for all other categories measured:

Taxis

- Use hybrid and electric vehicle only, provide office electric folding bikes that can be used for meetings and site visits

Couriers

- Use hybrid and electric vehicle only, use cycle couriers as default

Other opportunities to reduce the current office carbon footprint would include:

- Zero carbon office supply chains, reduce office waste, maximise local sourcing

Personal responsibility and home working

- Raise awareness by supporting/encouraging the staff to carry out a personal carbon footprint as an office challenge

C. Reduction measures and Climate Action Plan: Race to Zero

In order to make significant savings to the current office related GHG emissions, further to reducing the electricity use, gas use, and project-related travel, additional measures would be required to improve the fabric of the office space and systems used, via:

- **a deep retrofit of the existing GWP location + expanding on additional floor, or**
- **new office location**

Retrofit of existing office in GWP

GWP retrofit actions required to achieve significant energy and savings:

- fabric improvements: double glazing, internal insulation (will lead to improved airtightness and eliminate cold surfaces that prompt use of radiators to compensate the feel of cold draught next to the cool surfaces of windows and walls)
- services: heat recovery ventilation (MVHR) (will reduce heating requirements to minimum; will complement existing natural ventilation); the MVHR system is efficient only with good airtightness (fabric improvements)
- switching from fossil fuel based heating to an electric solution (heat pump); alternatively, install a dedicated gas meter to record office gas use.
- renewable energy generation

The recommendations above will require a discussion and agreement with landlords.

New office location

This would offer the opportunity to significantly improve the operational energy and would offer better control over the office environment. The following are identified as key considerations when choosing a new office:

- Building fabric and systems performance
- Ability to upgrade the fabric of an existing building
- Ability to choose the utility provider and monitor consumption of HT office area
- Localised control over heating/ventilation systems
- Good transport links
- Facilities to encourage the use of bicycles (showers, lockers, changing room)
- Opportunity to install renewable energy sources



D. Conclusion

This report relates to the operations of our two London premises, Greenwood Place (GWP) and Holmes Road (HR), between 5th April 2021 and 5th April 2022.

This analysis includes:

- Scope 1 emissions: gas;
- Scope 2 emissions: electricity;
- Scope 3 emissions: water use, project related transport and couriers, staff commuting, staff home working, deliveries, transmission & distribution losses and 'well to tank' emissions linked to the supply of electricity and gas used in the office.

The office carbon footprint during this period is estimated at 74 tonnes CO₂e, or approx. 0.66 tonnes CO₂e/person. This compares with 73tonnes CO₂e (0.89 tonnes CO₂e/person) in the previous year (pre-pandemic). The analysis shows that HT's main sources of carbon emissions between April 2021/April 2022 were:

- electricity use
- gas use
- home working
- project related travel

The emissions will be offset via a tree-planting scheme that will remove the same amount of carbon from the atmosphere as was emitted, using a £80/tonne carbon cost.

A comparison to the previous year's carbon footprint reflects the changes in work patterns post pandemic:

- slightly higher emissions linked to utilities (electricity and gas), and comparable emissions/person, with increased numbers of staff
- similar, though slightly higher, GHG emissions linked to project-related travel compared to 2020 (including project related flights in 2021)
- increased GHG emissions linked to staff commuting in 2021 whilst emissions related to home working remain similar

The practice has signed up to the Race to Zero challenge via the SME Climate Hub (<https://smeclimatehub.org/sme-climate-commitment/>), aiming to halve its

Office carbon emission reduction measures will focus on:

- 1. Electricity** - exploring a more energy efficient IT system if feasible (e.g. cloud server) & lighting in current premises, or new efficient fittings in new premises
- 2. Flights** - a business decision is needed to target a maximum number of annual economy flights for international projects
- 3. Heating** - closely linked with improvements to the office building fabric & services (linked to the current discussions regarding the option to retrofit the existing GWP offices, or move to new premises; for retrofit, the focus is on improvements to windows, wall insulation, introducing heat recovery ventilation and fossil fuel free heating)
- 4. Staff commuting** by actively supporting and encouraging green options

A business decision on maximum number of annual international flights and on office premises will be key in reaching the proposed GHG emissions reduction targets, as well as significantly improving existing premises, or finding energy efficient new office space.



Appendix A. Methodology

The carbon footprint has been calculating using 2021 UK Government GHG Conversion Factors for Company Reporting (<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2021>):

Conversion_Factors_2021_-_Full_set__for_advanced_users_.xlsx

Data x carbon factor kgCo2e = Total kilograms Co2e

/ 1000 = total tonnes

/ number of employees = total tonnes per person

Electricity

- In GWP there is a meter installed on the 5th floor (HT office) which accurately monitors the consumption of the office. Readings are recorded manually by HT on a monthly basis.
- In HR there is a meter installed by the utility provider that accurately monitors the consumption of the office. Monthly readings are recorded manually by HT on a monthly basis.

Gas

- In GWP there is one meter for the entire building. HT have taken annual gas meter readings and assigning a pro rata use for the HT office (entire 5th floor) in 2020. Data from bills was used in 2019, which included estimated readings. Utilities are included in the rent.
- HR has a meter installed by the utility provider that accurately monitors the consumption. Monthly readings are recorded manually by HT on a monthly basis.

Water

- In GWP there is one meter for the entire 5 storey building. HT have taken annual meter readings and assigning a pro rata use for the HT office (entire 5th floor) in 2020. Data from bills was used in 2019, which included estimated readings. Utilities are included in the rent.
- HR – Annual readings are recorded manually by HT in 2021 and going forward.

Commuting

- Commuting distances and mode of transport were calculated through an office survey. To maintain a high return this was simplified to a daily ‘average mode of transport’ and ‘return distance’. The yearly total was calculated by the average working days in 2021.

Haworth Tompkins Carbon Footprint 2021-2022

Scope	Category	Item	Units	Greenwood Place	Holmes Road	Total	Carbon Factor (kg CO2e)	Carbon Factor Reference	Carbon Footprint (tonnes CO2e)	Carbon Footprint per person (tonnes CO2e)	Category 2020/21	Comments
Scope 2	Utilities	HT offices - Electricity	kWh	87855.30	14411.00	102266.30	0.23314	20, S2, UK Electricity, F24	23.8	0.21	38.3	
Scope 1		HT offices - Gas	kWh	55006.12	15475.19	70481.31	0.20374	20, S1, Fuels, E37	14.4	0.13		
Scope 3		HT offices - Water	m3	253.31	76.73	330.04	0.344	20, S3, Water supply, F18	0.11	0.00		
Scope 3	Home working	Home working - Electricity	kWh			21881.19	0.23314	20, S2, UK Electricity, F24	5.1	0.05	17.3	estimate based on average no of staff and online data
Scope 3		Home working - Gas	kWh			59763.20	0.20374	20, S1, Fuels, E37	12.2	0.11		
Scope 3	Project related transport	Trains	km			36580.67694	0.03694	20, S3, Business travel - land, E87	1.35	0.01	5.69	
Scope 3		Flights	km			28416.00	varies	varies	4.20	0.04		
Scope 3		Taxis	km			695.73	0.20369	20, S3, Business travel - land, E72	0.14	0.00		
Scope 3		Couriers	km				0.20369	20, S3, Business travel - land, E72	0.00	0.00		
Scope 3	Staff Commuting	Car	km			1983.36	0.16844	20, S3, Business travel - land, E53	0.33	0.003	4.23	
Scope 3		Bus	km			2649.46	0.07856	20, S3, Business travel - land, E80	0.21	0.002		London bus (hybrid electric)
Scope 3		National rail	km			30449.43	0.03694	20, S3, Business travel - land, E87	1.12	0.010		
Scope 3		Overground, Light rail and tram	km			32189.94	0.02991	20, S3, Business travel - land, E89	0.96	0.009		
Scope 3		London Underground	km			19091.97	0.0275	20, S3, Business travel - land, E90	0.53	0.005		
Scope 3		Bicycle	km			51307.50	0.021	European Cyclists Federation	1.08	0.010		
Scope 3	Supplies	Modelmaking Deliveries	km			375.78	0.20369	20, S3, Business travel - land, E72	0.08	0.0007	0.08	
Scope 3	Well to tank	Well to tank- Electricity	kWh	87855.30		87855	0.05429	20, S3, WTT, E124	4.77	0.0426	6.23	only for GWP. HR supplier provides 100% renewable energy
Scope 3		Well to tank- Gas	kWh	55006.12		55006	0.02649	20, S3, WTT, E36	1.46	0.0130		
Scope 3	Transmission & Distribution losses	Transmission & Distribution losses - Electricity	kWh			102266	0.02005	20, S3, Transmission & dist	2.05	0.0183	2.05	applies to all electricity provided
								TOTAL (tonnes CO2e)	74	0.66		

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