Carbon Footprint Appraisal Report
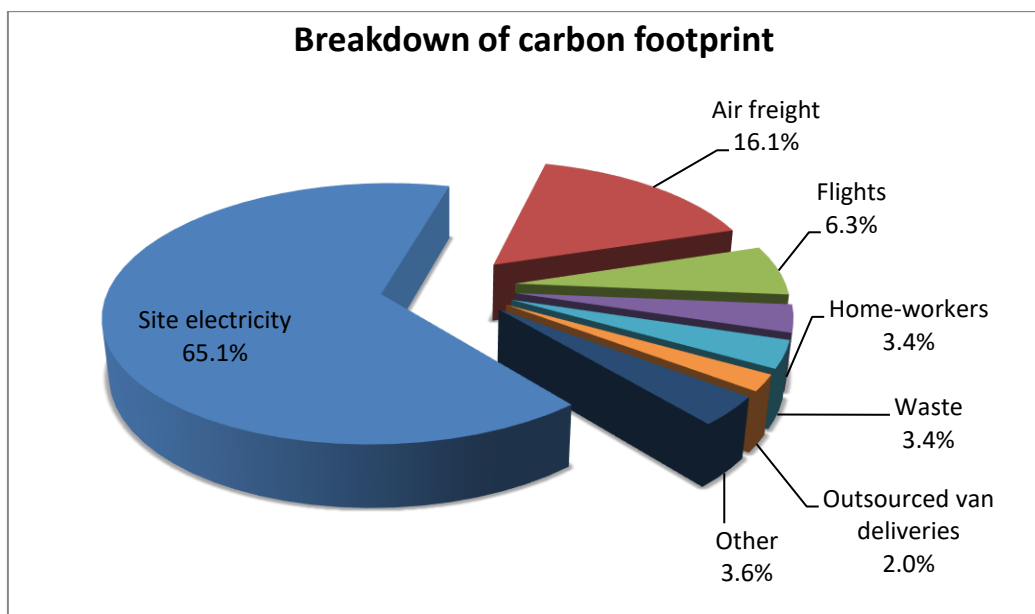
theprintspace

carbon footprint™

Executive Summary

Carbon Footprint Ltd has assessed the greenhouse gas (GHG) emissions of The Print Space from 1st July 2019 to 30th June 2020 based on a dataset provided by the company.

Current Performance
- Absolute GHG emissions have decreased by 92.5% compared with the baseline year.
- The most significant emission source is on-site electricity use, accounting for 65.1% of the total carbon footprint.
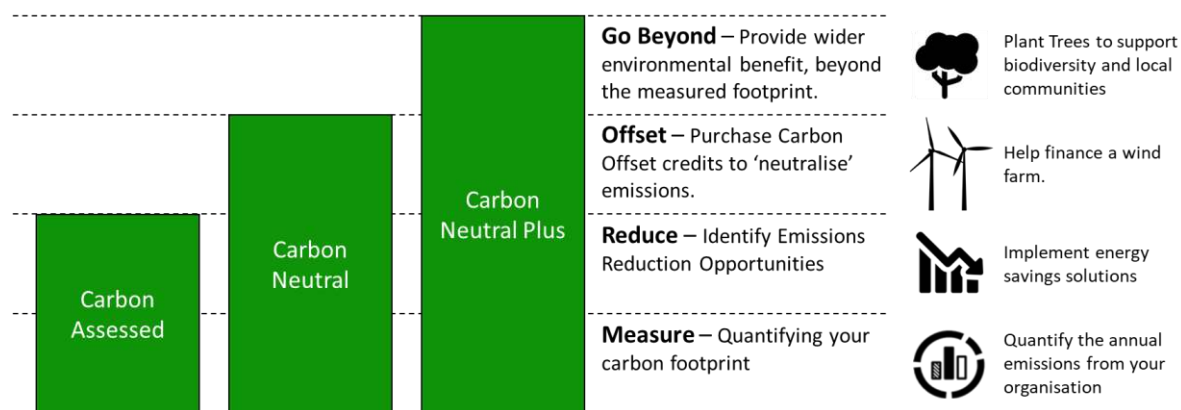
Recommendations
- Offset your carbon footprint to account for those emissions already created. This will enable you to fund a carbon saving elsewhere, as well as gaining carbon neutral status.
- Improve the accuracy of your electricity data by taking monthly meter readings (or one reading at the beginning and another at the end of the data period as a minimum) as current consumption data (kWh) is sourced from estimated readings.
- Open up a dialogue with the landlord at the Hoxton site to retrieve consumption data (kWh) for the building to allow us to apportion the use to The Print Space's floor area. This would enable greater calculation accuracy than the current average benchmarks used.
- Evaluate the effectiveness of using remote meetings and limited travel during COVID-19, and re-define what your business classifies as "essential" travel going forwards to reduce emissions associated with passenger flights.
- When leasing/purchasing new vehicles, consider transitioning to electric vehicles (EV) or plug-in hybrid electric vehicles (PHEV) and installing charging points on-site.
- Set reduction targets based on intensity metrics (e.g. emissions per employee and/or per £M turnover).

Breakdown of carbon footprint

Air freight 16.1%
Flights 6.3%
Home-workers 3.4%
Waste 3.4%
Outsourced van deliveries 2.0%
Other 3.6%
Site electricity 65.1%

* Other constitutes company van travel, water (and wastewater), taxi and rail travel.

	Baseline Year 2017/18	Current Year 2019/2020	% change from baseline year
Total Tonnes CO$_2$e	757.09	56.44	-92.55%
Tonnes of CO$_2$e per employee	29.12	1.88	-93.54%
Tonnes of CO$_2$e per £M turnover	252.37	18.03	-92.86%

Furthermore, we recommend an approach that goes beyond measuring the organisation's greenhouse gas emissions. To become an exemplar in the market, The Print Space should consider offsetting its emissions to become a carbon neutral organisation.

Go Beyond – Provide wider environmental benefit, beyond the measured footprint.

Offset – Purchase Carbon Offset credits to 'neutralise' emissions.

Reduce – Identify Emissions Reduction Opportunities

Measure – Quantifying your carbon footprint

Plant Trees to support biodiversity and local communities

Help finance a wind farm.

Implement energy savings solutions

Quantify the annual emissions from your organisation

Commercial in Confidence 26 March 2021

Table of Contents

Quality Control

Report issue number:	1.0
Date:	26 March 2021
Calculations completed by:	Zoe Booth
Calculations reviewed by:	Katie Elmer
Report produced by:	Zoe Booth
Report reviewed by:	Grace Parker
Director approval:	Dr Wendy Buckley

1. Introduction

1.1.   Company Overview

The Print Space is the UK's leading fine art and photographic printers. Since opening in 2007, their team of experts also offer advice in retouching and colour management, printing, mounting, framing and selling art.

1.2.   The Print Space's carbon management journey

Carbon Footprint provides a simple six step annual journey to enhance your sustainability credentials whilst complying to best practice and differentiating your brand. The Print Spacehas completed the first step of its annual carbon management journey.

| Measure | Aim | Reduce | Offset | Communicate | Comply |

The purpose of this report is to:
- Summarise the results of the carbon footprint assessment.
- Provide advice on carbon reduction targets.
- Provide practical recommendations to enhance your sustainability programme and reduce your emissions.

1.3.   What is a carbon footprint?

A carbon footprint is a measure of the impact our activities have on the environment in terms of the amount of greenhouse gases produced, measured in units of carbon dioxide equivalents (CO_2e). A carbon footprint is made up of two parts, direct and indirect emissions.

1. **Direct emissions:**
   Direct emissions are produced by sources which are owned or controlled by the reporting organisation and include electricity use, burning oil or gas for heating, and fuel consumption as a result of business travel or distribution. Direct emissions correspond to elements within scopes 1, 2 and 3 of the World Resources Institute GHG Protocol, as indicated in Table 1.

Table 1: Direct emissions sources

Footprint	Activity	Scope
Direct	Electricity, heat or steam generated on-site	1
	Natural gas, gas oil, LPG or coal use attributable to company-owned facilities	1
	Company owned vehicle travel	1
	Production of any of the six GHGs (CO_2, CH_4, N_2O, HFCs, PFCs and SF_6)	1
	Consumption of purchased electricity, heat steam and cooling	2
	Employee business travel (using transport not owned by the company)	3

2. **Indirect emissions:**

Indirect emissions result from a company's upstream and downstream activities. These are typically from outsourced/contract manufacturing, and products and the services offered by the organisation. Indirect emissions correspond to scope 3 of the World Resources Institute GHG Protocol excluding employee business travel as indicated in Table 2.

Table 2: Indirect emissions sources

Footprint	Activity	Scope
Indirect	Employee commuting	3
	Transportation of an organisation's products, materials or waste by another organisation	3
	Outsourced activities, contract manufacturing and franchises	3
	GHG emissions from waste generated by the organisation but managed by another organisation	3
	GHG emissions from the use and end-of-life phases of the organisation's products and services	3
	GHG emissions arising from the production and distribution of energy products, other than electricity, steam and heat, consumed by the organisation	3
	GHG emissions from the production of purchased raw or primary materials	3
	GHG emissions arising from the transmission and distribution of purchased electricity	3

For businesses, the assessment focuses on direct emissions, as these lie under the control of the organisation. However, we ask companies to recognise that there is an indirect emissions footprint and select suppliers based on their environmental credentials alongside price and performance.

1.4. Why is it important?

Climate change is a global threat which will impact the lives of everyone on the planet.

Over the past two decades the effects of climate change have accelerated. Considerable evidence exists proving climate change has been exacerbated by human activity. Changes in our post-industrial lifestyles have altered the chemical composition of the atmosphere, generating a build-up of greenhouse gases – primarily carbon dioxide, methane, and nitrous oxide levels – raising the average global temperature.

The consequences are already evident and will continue to worsen unless significant action is taken and quickly. **Sea level will continue to rise and local climate conditions to be altered, causing an increase in extreme weather events, affecting forests, crop yields, and water supplies. This can lead to homelessness, famine and conflict as resources become scarcer.**

Environmental pollution and climate change affect human health, accelerate species extinction, and disrupt vital ecosystems. **Ambient (outdoor) air pollution is responsible for at least 4 million human deaths each year**[1]. In addition to this, poor air quality and issues of clean water availability leave us

---

[1] World Health Organisation. https://www.who.int/health-topics/air-pollution

more susceptible to diseases such as COVID-19. Combined with rises in temperature and deforestation (from direct human action and climate change related events), resulting in the displacement of animals from their native habitats, the frequency of disease occurrence will increase, as disease will transfer from animals to other geographical areas and larger human populations.

It is vital that all individuals, businesses, organisations and governments work towards the common goal of reducing greenhouse gas emissions. This carbon footprint assessment will enable The Print Space to continue doing its bit by monitoring, reducing and offsetting its emissions.

1.5.   ISO 14064-1:2018

This GHG report has been prepared in accordance with Part 1 of ISO 14064: 2018. The GHG inventory, report, or statement has not been verified.

This standard requires the estimation of likely error margin based on a simple error analysis, to identify uncertainty in the calculations. Our simple error analysis provides a level of uncertainty based on the accuracy of the data provided. This shows the error for each emissions source, as well as the sum of these divided by the total emissions, to produce a total percentage error.

1.6.   Calculation methodology

The carbon footprint appraisal is derived from a combination of client data collection and data computation by Carbon Footprint's analysts.

Carbon Footprint's analysts have calculated the majority The Print Space's footprint using the 2020 conversion factors developed by the UK Department for Environment, Food and Rural Affairs (Defra) and the Department for Business, Energy & Industrial Strategy (BEIS). For the site in Germany, the electricity generation factor was sourced from AIB (2020). These factors are multiplied with the company's GHG activity data. Carbon Footprint has selected this preferred method of calculation as a government recognised approach and uses data which is realistically available from the client, particularly when direct monitoring is either unavailable or prohibitively expensive.

Additional methodology information is presented in Annex A.

1.7.   Data supplied for the carbon footprint appraisal

A summary of the data supplied by The Print Space for the appraisal is presented in Annex B.

1.8.   Abbreviations

A/C   Air Conditioning
BEIS   Department for Business Energy & Industrial Strategy
CDP   Carbon Disclosure Project
CO_2 Carbon Dioxide
CO_2e Carbon Dioxide Equivalent
Defra   Department for Environment, Food and Rural Affairs
EU   European Union
EV   Electric Vehicle
GHG   Greenhouse Gas
HGV   Heavy Goods Vehicle
IPCC   Intergovernmental Panel on Climate Change
ISO   International Standards Organisation
km   Kilometres
kWh   Kilowatt Hours
LPF   London Picture Framing
PHEV   Plug-in Hybrid Electric Vehicle
PR   Public Relations
TPS   The Print Space
TPS DE   The Print Space Germany
UN   United Nations

2. Calculation Scope and Accuracy

2.1. Scope of this work

Carbon Footprint has assessed the GHG emissions from 1st July 2019 to 30th June 2020 resulting from the energy consumption at The Print Space's facilities and its business transport activities.

2.2. Organisational & reporting boundaries

The organisation has accounted for all quantified GHG emissions and/or removals from facilities over which it has financial control. The assessment covers the following reporting boundaries:

Figure 1: Assessment boundary

Scope 1 Direct Emissions	Scope 2 Energy Indirect	Scope 3 Other Indirect
Fuel combustion **None**	Consumption of purchased electricity, heat steam and cooling **Electricity**	Purchased materials and fuels **Water** / Paper etc.
Owned Transport **Company van travel**		Transmission and distribution of energy **Electricity**
		Leased assets, outsourcing and franchising **Outsourced air freight and van deliveries**
Process emissions **None**		Transport related activities **Flights, rail and taxi travel**
		Use of sold goods & services **None**
Fugitive emissions **Refrigerants**		Waste Disposal **Residual & Recyclable**

Key:

Within the assessment boundary	Not included within assessment boundary

Indirect GHG sources that are outside the assessment boundary have been excluded from quantification as it is not technically feasible or cost effective, to include these in the GHG assessment.

Issue 1.0
26 March 2021

2.3.   Calculation accuracy & 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 which will subsequently allow for better targeting of areas where improvements can be made. Materiality is determined by the percentage contribution of each element to the overall footprint.

The data provided is derived from energy bills, expenses claims and data collected by The Print Space (Table 3). Based on the accuracy of the data provided, a simple error analysis has been used to estimate the error margin for the appraisal results.

Table 3: Assessment accuracy, materiality and simple error analysis

Dataset	Source and data comments	Accuracy	Materiality	Uncertainty	Estimated Error Margin (tCO$_2$e)
Site electricity *TPS, LPF and TPS DE*	Consumption (kWh) has been sourced from utility bills.	Good	High (>50%)	10%	3.44
Site electricity *Hoxton*	Consumption (kWh) has been estimated using occupied floor area and CIBSE factors.	Estimated	High (>50%)	50%	1.16
Air freight	Tonne.km were calculated by The Print Space based on average weights of prints and frames, along with the number of orders and the average delivery distances both within the UK and EU, and outside the EU. There were a small number of orders that we believe to be incorrectly allocated but the error is negligible.	Good	Medium (5-<20%)	10%	0.91
Flights	Origin and destination airports were provided, along with cabin class.	Excellent	Medium (5-<20%)	1%	0.04
Home-workers	The number of employees working from home and the hours worked were provided by The Print Space and were used to estimate home-worker emissions by Carbon Footprint Ltd.	Good	Low (1-<5%)	10%	0.19
Waste	Tonnes of waste split by waste stream were provided.	Good	Low (1-<5%)	10%	0.19
Outsourced van deliveries	Tonne.km were calculated by The Print Space based on average weights of prints and frames, along with the number of orders and the average	Good	Low (1-<5%)	10%	0.12

Dataset	Source and data comments	Accuracy	Materiality	Uncertainty	Estimated Error Margin (tCO$_2$e)
	delivery distances both within the UK and EU, and outside the EU. There were a small number of orders that we believe to be incorrectly allocated but the error is negligible.				
Company van travel	Mileages were provided from MOT reports.	Very Good	Low (1-<5%)	5%	0.05
Water (and wastewater)	Consumption (m^3) was provided for all sites.	Good	Very Low (<1%)	10%	0.05
Taxi travel	Cost data and number of journeys was provided by each site.	Good	Very Low (<1%)	10%	0.03
Rail travel	A mixture of origin and destination, and cost data were provided.	Good	Very Low (<1%)	10%	0.02
Total				**+/- 9%**	**+/- 5.27**

To improve accuracy for future assessments, please see recommendations provided in Section 5.
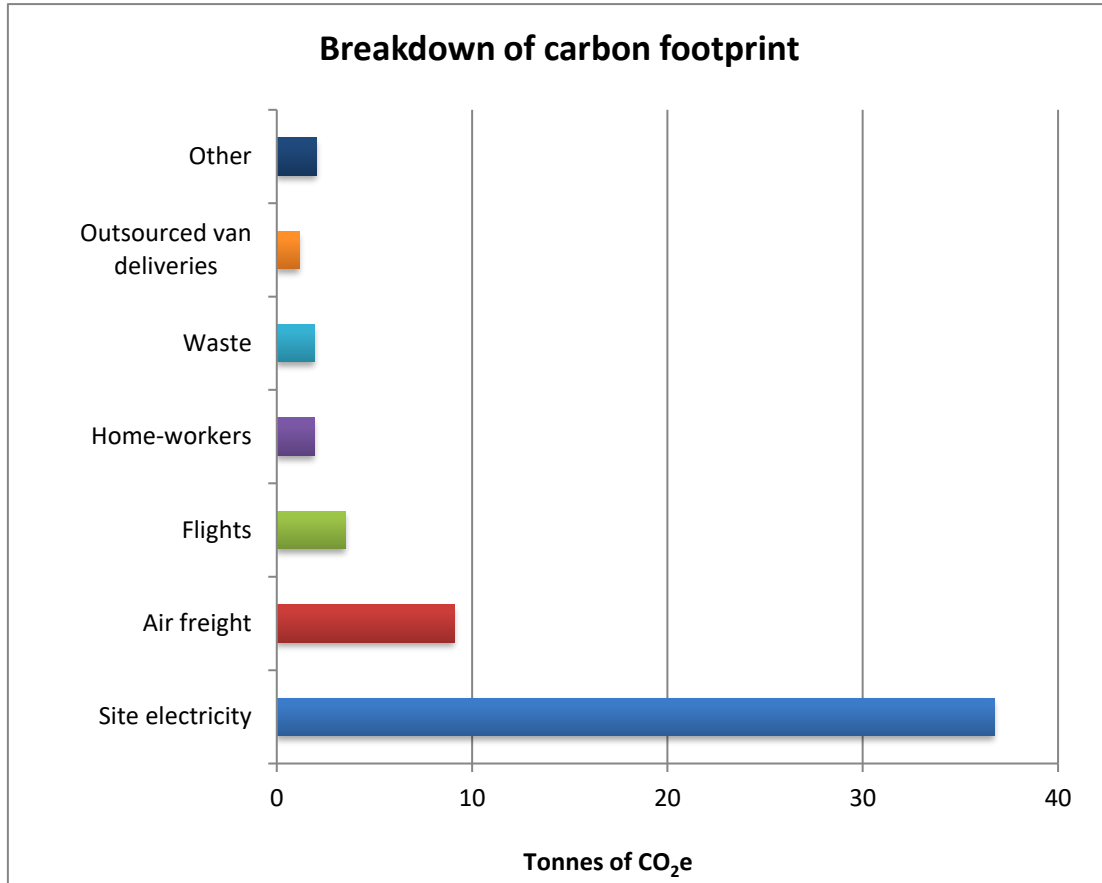
3. Carbon Footprint Results

3.1. Summary of results

The total carbon footprint for The Print Space for the period ending 30th June 2020 was 56.44 tonnes CO_2e. The following table and graphs provide a summary of results for The Print Space's carbon footprint calculation by scope and source activity.
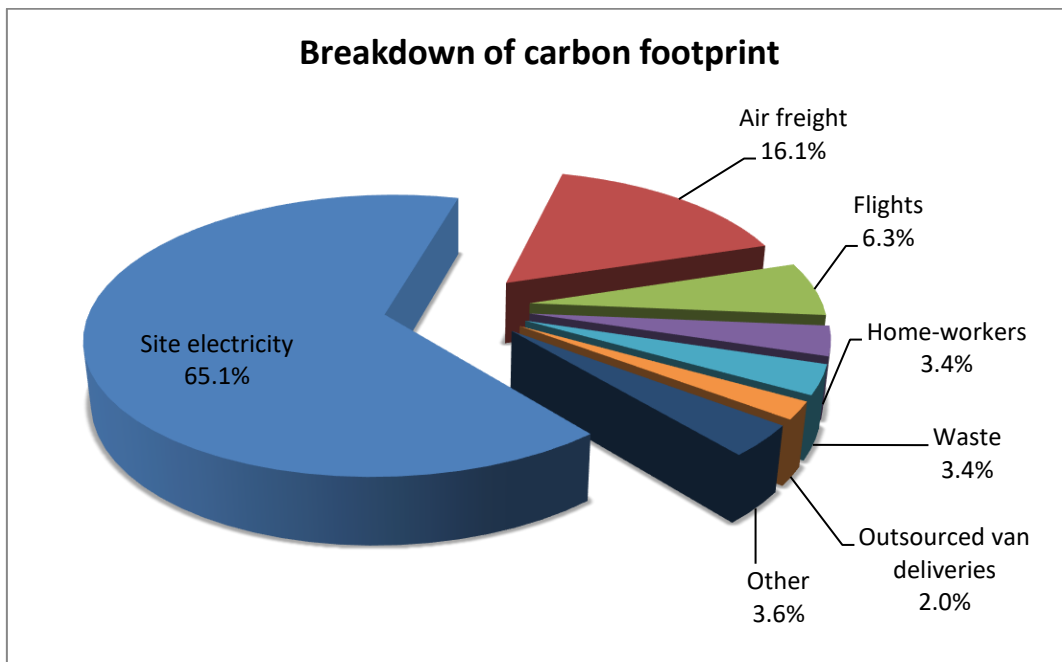
Table 4: Results of The Print Space's carbon footprint assessment by scope and source activity

Scope	Activity	Tonnes CO_2e
Scope 1	Company van travel	1.08
Scope 1 Sub Total		**1.08**
Scope 2	Electricity generation	34.17
Scope 2 Sub Total		**34.17**
Scope 3	Air freight	9.09
	Flights	3.54
	Electricity transmission & distribution	2.59
	Home-workers	1.94
	Waste	1.93
	Outsourced van deliveries	1.15
	Water (and wastewater)	0.53
	Taxi travel	0.27
	Rail travel	0.17
Scope 3 Sub Total		**21.20**
Total tonnes of CO_2e		**56.44**
Tonnes of CO_2e per employee		**1.88**
Tonnes of CO_2e per £M turnover		**18.03**

Figures 2 and 3 show the breakdown of the total GHG emissions produced by The Print Space. Site electricity is the greatest contributor at 65.1%; with air freight being the next major emissions source at 16.1%. All other elements account for less than 10% individually. Company van travel, water (and wastewater), taxi and rail travel account for a very low proportion of the overall carbon footprint, at a combined 3.6%.

Commercial in Confidence
Issue 1.0
26 March 2021

Breakdown of carbon footprint

Figure 2: Contribution in tonnes of CO₂e of each element of The Print Space's carbon footprint

Breakdown of carbon footprint

Figure 3: Percentage contribution of each element of The Print Space's carbon footprint

* Other constitutes company van travel, water (and wastewater), taxi and rail travel.

3.2.   Emissions from energy usage at site facilities

The Print Space has three sites in the UK, with the head office in London, as well as one site located in Germany. Table 5 and Figure 4 show the breakdown of emissions from on-site energy use at each of The Print Space sites.

The head office and Germany site are they greatest contributors, in terms of tCO_2e, producing similar quantities of emissions. However, in terms of activity data (kWh) The Print Space head office consumed considerably more electricity than the other three sites; with The Print Space Germany and London Picture Framing showing a similar level of consumption (kWh). The difference in the trend for tCO_2e and kWh consumption for electricity is due to Germany having a higher emission factor for electricity. This is a result of the different average electricity grid fuel mix between the UK and Germany due to greater fossil fuel use.

As well as providing site energy consumption data, The Print Space also provided data regarding the number of employees working from home, as well as their working hours. This is due to the increase in remote/home-working during the Covid-19 pandemic and the need to capture the work-related energy use which would normally have taken place on-site. Carbon Footprint Ltd have used this information to estimate the GHG emissions associated with working from home. Table 6 provides a breakdown of home-working emissions. Please note that The Print Space already had some members of staff homeworking overseas prior to Covid-19.

Table 5: CO$_2$e emissions as a result of site energy consumption and per employee

Site	No. of staff	Electricity (kWh)	Electricity (tCO₂e)	Total tCO₂e per employee
The Print Space Germany	3	32,987	13.22	4.41
The Print Space	13	49,307	12.48	0.96
London Picture Framing	8	34,515	8.74	1.09
Hoxton (Finance & Marketing)	6	9,156[2]	2.32	0.39
Total	**30**	**125,965**	**36.76**	**1.23**

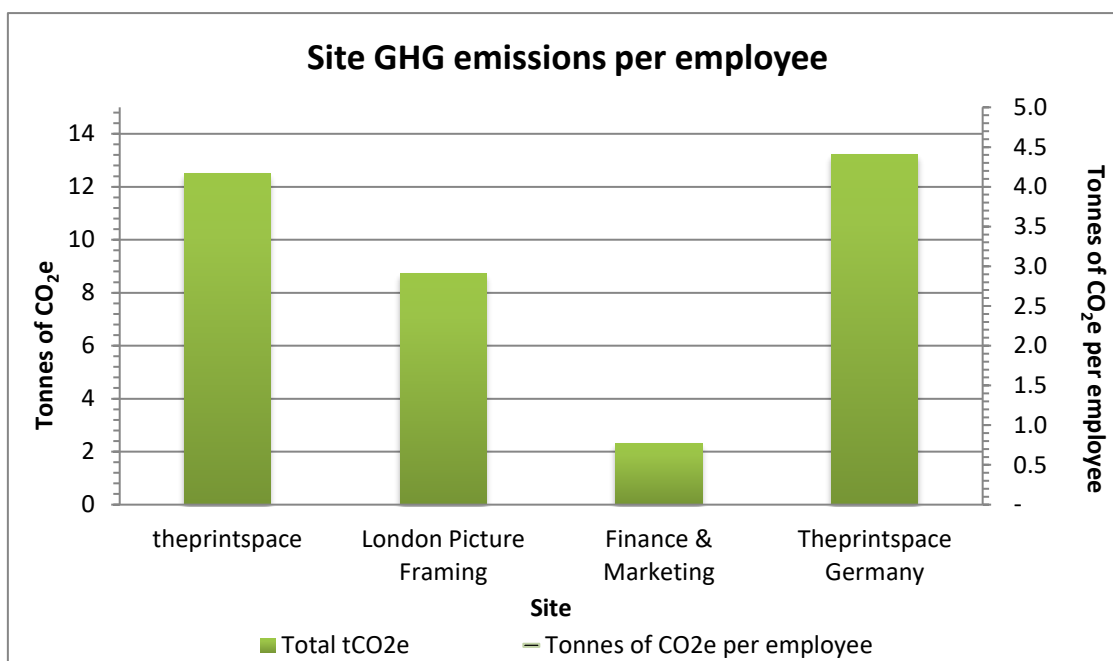[2] Estimated using CIBSE factors based on m^2 floor area

*Figure 4: CO₂e emissions on a per site and employee basis*

Table 6: CO₂e emissions as a result of home-working

Home-worker type (occupancy during work hours)	No. of staff	Hours per day	Days per week	Weeks per year	Country	Total Emissions (tCO$_2$e)
Single-occupancy	5	9	5	15	United Kingdom	1.41
Shared home space	7	9	5	15	United Kingdom	0.13
Shared home space	1	9	5	15	Spain	0.02
Shared home space	1	9	5	15	South Africa	0.08
Single-occupancy	1	9	5	15	Italy	0.29
Total	**15**					**1.94**

3.3. Emissions from business travel

The next graph and table show the GHG emissions resulting from business travel. It can be seen that the largest contributor is flights, accounting for 70.1% of the total transport emissions. A total of 25 flights were taken during the data period, with all of these being between London and Dusseldorf/Berlin (for travel between the UK and German sites). All flights were taken in economy class, which is 50% less carbon intensive than taking short-haul flights in business class. However, I recommend that The Print Space review their travel policy to determine which flights are classed as essential, to prevent unnecessary flying between sites going forward.

The vast majority of business travel is carried out via public transport, keeping the overall transport footprint relatively low.

GHG emissions by transport type
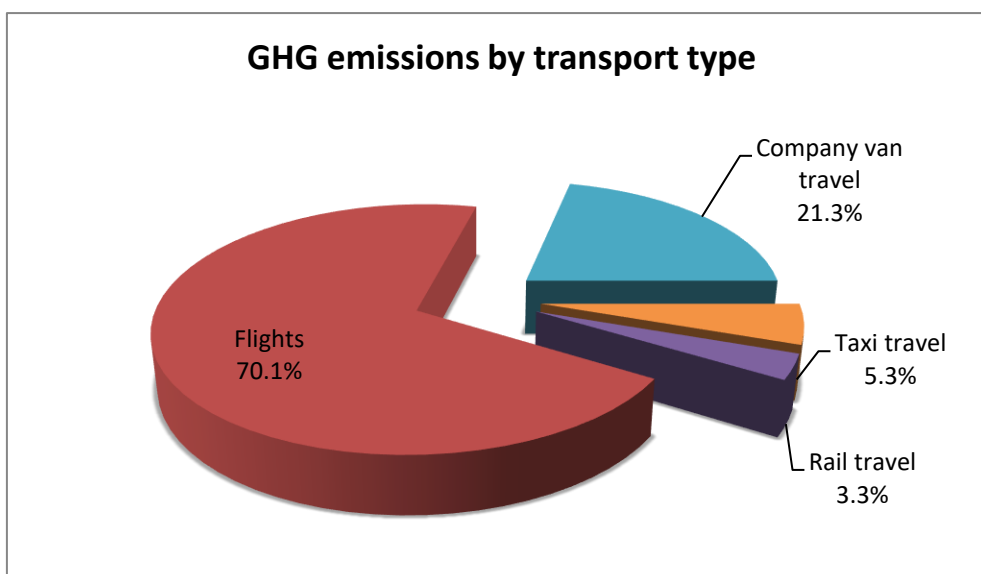
Figure 5: Percentage contribution of each element to transportation emissions

Table 7: CO₂e emissions due to transportation

Type of Travel / Transport	Tonnes of CO_2e
Flights	3.54
Company van travel	1.08
Taxi travel	0.27
Rail travel	0.17
Total	**14.13**

The detailed results are given in Annex B.

3.4.   Emissions from outsourced freight activity

Table 8 below shows the breakdown of outsourced freight which is used to deliver the prints and frames produced by The Print Space. Data provided by The Print Space was included the number of prints and frames orders, as well as the freight type, average weight per frame/print and the average delivery distances in the UK, EU and outside of the EU. This information was used by The Print Space to calculate the tonne.km of their freight activity. Carbon Footprint Ltd carried have checked these calculations and used these figures to calculate the associated emissions. A minor error was found in the allocations between categories but this was not material to the footprint (<1%).

It can be seen that the majority of GHG emissions are attributed to air freight, with a greater quantity of orders being shipped via this method.

Table 8: CO₂e emissions from outsourced freight deliveries

Type of transport	Product type	Tonne.km	Tonnes of CO_2e
Air freight	Prints	6,446	7.31
	Frames	1,570	1.78
Road freight (van)	Prints	1,870	1.15
Total		**9,886**	**10.24**

3.5.   Emissions from waste

The print space has provided the weight of waste (tonnes) split by waste stream and site. Table 9 shows the split between waste at each site, with the total emissions from waste accounting for 3.4% of the total carbon footprint. It has been assumed that non-recyclable waste has been sent for incineration.

Table 9: CO₂e emissions due to waste

Site	Type of Waste	Waste Produced (tonnes)	Total emissions (tCO₂e)
TPS	Residual	6.5	0.14
	Recyclable	11.2	0.24
LPF	Residual	52	1.11
	Recyclable	15.6	0.33
TPS DE	Residual	1.95	0.04
	Recyclable	3.3	0.07
Total		**90.55**	**1.93**

3.6.   Emissions from water and wastewater

The Print Space have provided information regarding the consumption of water (m^3) across their sites. Table 10 shows the breakdown of emissions resulting from water supply, and wastewater treatment as a result of consumption on site.

Table 10: CO₂e emissions due to water consumption

Site	Water supply (m^3)	Water Supply (tCO₂e)	Wastewater treatment (tCO₂e)	Total emissions from water consumption (tCO₂e)
TPS	381	0.13	0.27	0.40
TPS DE	80	0.03	0.06	0.08
LPF	45	0.02	0.03	0.05
Totals	**506**	**0.17**	**0.36**	**0.53**

3.7.   Emissions from refrigerants

No refrigerant top-ups were reported during this data period and email evidence from the service provider was given as evidence of this for the TPS and LPF sites in the UK.

4. Comparison and Benchmarking

4.1. Comparison to base year emissions

This is the second carbon footprint assessment The Print Space has carried out. The baseline year assessment was carried out for the 2017/18 data period. Due to resources following the Covid-19 pandemic, the 2018/19 period was not calculated and the decision was taken by The Print Space to continue with the most recent data period (2019/20).

Table 11 and Figure 6 below show historical emissions per activity, as well as The Print Space's total carbon footprint and carbon intensity metrics (tonnes of CO_2e per employee and tonnes of CO_2e per £M turnover).

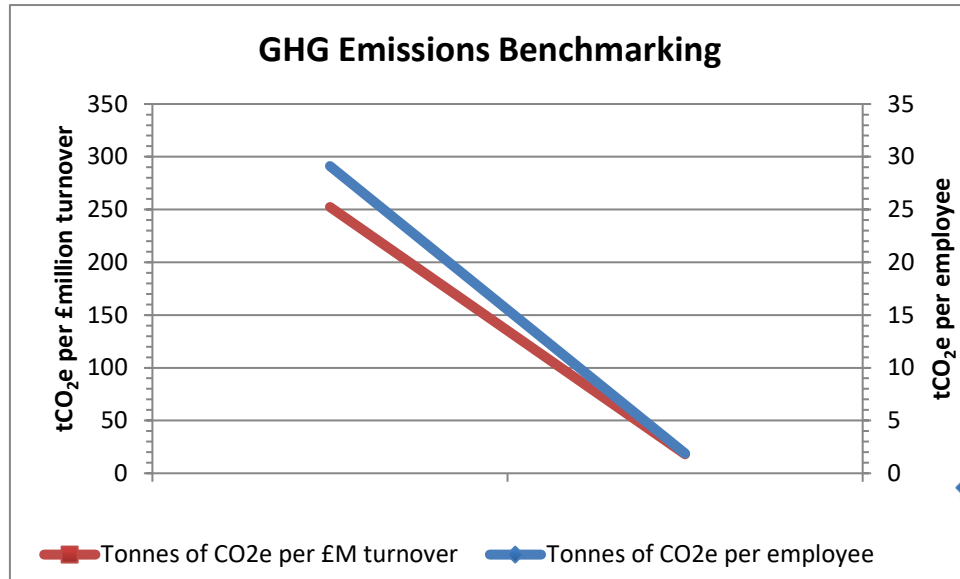*Table 11: The Print Space's carbon footprint comparison and percentage change*

Element	Baseline Year 2017/18	Current Year 2019/20	% change on baseline year
Site electricity	30.06	36.76	22.3%
Air freight	350.02	9.09	-97.4%
Flights	0.11	3.54	3,113.7%
Home-workers	-	1.94	n/a
Waste	31.09	1.93	-93.8%
Van deliveries (outsourced)	307.65	1.15	-99.6%
Company van travel	0.35	1.08	207.7%
Water (and wastewater)	0.40	0.53	33.2%
Taxi travel	0.04	0.27	566.7%
Rail travel	0.18	0.17	-7.2%
Bus travel	0.003	-	-100.0%
Lorry freight (outsourced)	24.09	-	-100.0%
Employee Commuting	13.10	-	-100.0%
Total Tonnes of CO_2e	**757.09**	**56.44**	**-92.5%**
Tonnes of CO_2e per employee	**29.12**	**1.88**	**-93.5%**
Tonnes of CO_2e per £M turnover	**252.37**	**18.03**	**-92.9%**

The Print Space has decreased its absolute total carbon footprint by -92.5% between this period and the baseline year. GHG emissions have also shown to decrease for both intensity metrics; tCO_2e per employee and per £M turnover (see Figure 6). This can largely be attributed to reductions in the number of air freight and outsourced van deliveries.

Flight have increased since the baseline year as a result of travelling between the UK and German sites. The Print Space site in Germany has been acquired since the baseline year and therefore travel between the two sites in the baseline year were not required.

Outsourced lorry freight was not included within the scope of this assessment as it is no longer used by The Print Space. Employee commuting was also excluded from this assessment due to the resource

required to collate the data. Additionally, due to the restrictions in place caused by COVID19, around half of the staff members were working from home for part of the data period and were therefore not commuting.

Figure 6: Carbon footprint of The Print Space 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.

5. Key Recommendations

The following recommendations are designed to help you build upon the results of the appraisal and your carbon management over the coming year.

Measure   Aim   Reduce   Offset   Communicate   Comply
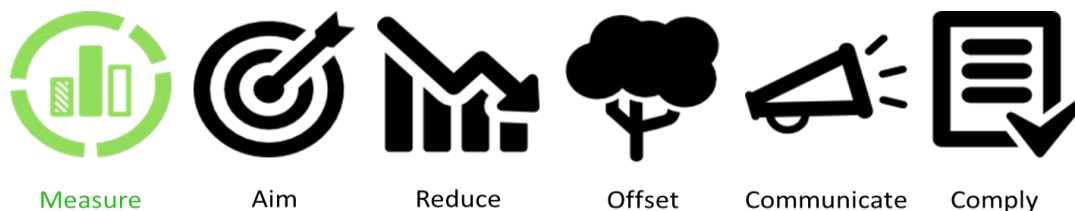
5.1.   Carbon & sustainability targets

5.1.1.   Target setting

I recommend that The Print Space sets internal targets to reduce emissions and develop an action plan to achieve these. All targets set should be reviewed regularly and amended accordingly (i.e. target increased if it is met ahead of schedule). I recommend a combination of short-term and long-term targets based on absolute and intensity metrics. These can be measured in terms of activity data (e.g. kWh) or emissions.

5.1.2.   Improving the accuracy of future carbon footprint assessments

The estimated overall error margin is +/- 4.25 tCO_2e; equating to 9% of the total footprint.

To improve the accuracy of future assessments, we recommend the following:

- **Electricity** –
  - The majority of utility bills were based on estimated readings. Taking monthly meter readings (or the beginning and end of the data period as a minimum) would enable a much more accurate measure of the emissions associated with electricity.
  - **Hoxton** – opening up a dialogue with your landlord to retrieve the consumption (kWh) data for the building, which can then be apportioned based on floor area. This would allow a more accurate estimation of electricity consumption than using average CIBSE benchmark figures.
- **Freight** –
  - Investigate and ensure that freight is categorised correctly. (e.g. it is unlikely that air freight will occur within the UK)
  - Consider categorising freight into short-haul and long-haul flights if exact locations are not available. This would be in line with the calculation method carried out within the baseline year.

5.2. Reducing emissions

To reduce GHG emissions, we recommend the following:

- Evaluate the effectiveness of using remote meetings and limited travel during COVID-19, and re-define what your business classifies as "essential" travel going forwards.
- When leasing/purchasing new vehicles, consider transitioning to electric vehicles (EV) or plug-in hybrid electric vehicles (PHEV) and installing charging points on-site. Analyse the feasibility of adding EVs to your fleet by comparing average daily required travel distance against real-world driving ranges of EVs.
- Consider switching from air freight to road or shipping instead as these are typically less carbon intensive methods.

5.2.1. Setting carbon reduction budgets based on emissions

Having an agreed and defined system for investing in future carbon reduction activities helps drive carbon reduction and cost savings in a business. Many leading organisations are doing this through setting an "Internal Carbon Tax" or an "Internal Carbon Price" within their organisation (see http://www.carbonfootprint.com/internal_carbon_pricing.html for more information).

We suggest starting by setting a price of £20-25 per tonne of CO_2e, as this typically relates to 1-6% of the cost of causing emissions (as shown in the table below). You may wish to collect the "taxation" by each functional group (depending on their emissions), or simply account for this at the top-level company budgeting.

Table 12: Carbon price compared to energy and travel costs

Emissions Source	Electricity	Natural Gas	Car Miles	Flights
1 tonne CO_2e is equivalent to	2400 kWh	5500 kWh	3300 miles	5200 km
Cost to produce 1 tonne CO_2e	£335	£220	£1485*	£400
£20 carbon price represents	6%	9%	1%	5%

assumes a rate of 45p per mile

We recommend allocating this defined budget to help both internal and external carbon reduction activities. For example, it could be split:

- 75% on internal carbon reduction measures
- 25% on external carbon offsetting activities

Investments in internal carbon reduction activities should be made based on the level of carbon savings and the associated cost savings. Good carbon reduction investments usually pay for themselves and give a return on investment to the business within 3 years. Carbon offsetting return on investment is primarily measured through access to tenders, brand enhancement and PR (use marketing return on investment techniques).

5.2.2. Funding opportunities

The following section provides details of current funding opportunities in the UK that may be applicable to The Print Space in order to increase the percentage of electric/hybrid vehicles within the fleet.

Plug-in car & van grants:

This funding is provided in the form of grants issued by the UK Government, which go towards the purchase of a plug-in electric vehicle. The levels of funding are as follows:
- 35% of the cost of a van, up to a maximum of £6,000 (for large vans)
- 35% of the cost of a car, up to a maximum of £2,500 (for cars with a list price below £35,000)

This will help to reduce the company's vehicle travel emissions. Further details on which vehicles are eligible are available through this website: https://www.gov.uk/plug-in-car-van-grants

Workplace Charging Scheme:

This funding is provided in the form of vouchers issued by the UK Government, which go towards the purchase of electric vehicle charging points.

The grant cap is set at a maximum of £350 (including VAT) per socket. Each company can apply for up to 40 sockets (across all sites).

For more information, refer to: https://www.gov.uk/government/publications/workplace-charging-scheme-guidance-for-applicants-installers-and-manufacturers

5.3. Carbon offsetting

Carbon offsetting is a great way to compensate for the emissions that you cannot reduce, by funding an equivalent carbon dioxide saving elsewhere.

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.

Example of Carbon Offsetting Projects:

Tree Planting in UK Schools

Avoided Deforestation in the Brazilian Amazon

Clean Water in Rwanda

Commercial in Confidence

5.4. Carbon Footprint Standard

5.4.1. Brand endorsement

The Print Space, in conjunction with Carbon Footprint Ltd, has assessed its carbon footprint and shown a reduction of 92.5% based on its absolute emissions. By achieving this The Print Space 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.

The Carbon Footprint Standard is recognition of your organisation's commitment to carbon management. The text to the right-hand side of the logo demonstrates what level you have achieved in line with international best practice.

5.4.2. Scope

As you are at the beginning of your Carbon Footprint Journey, you have decided to focus on the carbon footprint at the organisational level. This is a great start. Over time, you can progress your carbon footprinting to increase the scope and encompass your products, supply chain and your employees. By doing so you will be able to receive the Carbon Footprint Standard for these categories, thus standing out amongst your competitors and truly driving the sustainability or your brand.

Commercial in Confidence
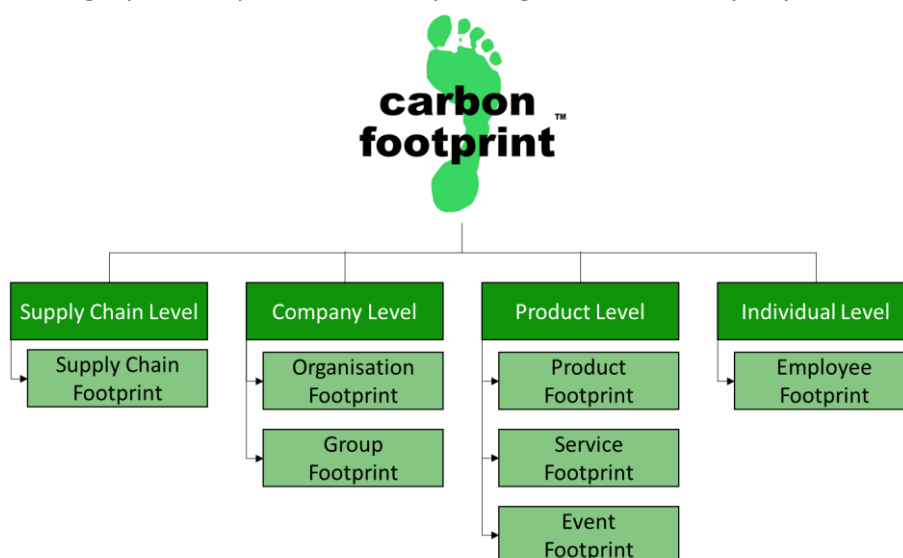
Once the scope has been identified, the Carbon Footprint Standard will allow The Print Space to develop from a novice to an exemplar in the market. You can progress from a Carbon Assessed Organisation to a Carbon Neutral or a Carbon Neutral Plus Organisation by supporting a range of environmental projects that come with wider CSR and PR opportunities.

Alongside the sustainability rationale, this will allow you to leverage the Carbon Footprint Standard to truly stand out in your market. Progressing will resonate with like-minded customers and will help your business grow.
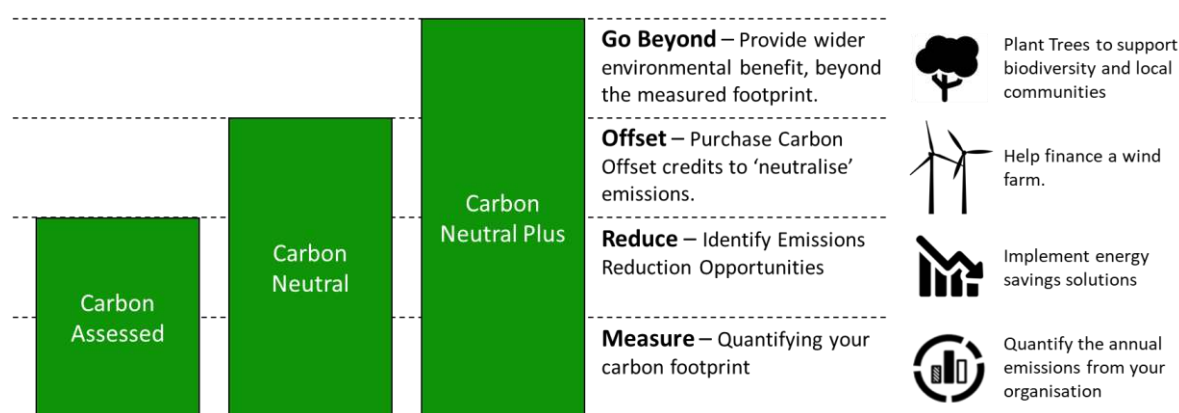
5.4.3. Communicate

Make sure you communicate your actions and achievements effectively, both within your organisation, to help develop your culture, and externally to help improve your brand image.

When promoting your actions, be sure to utilise all marketing channels available to you, such as website, newsletters, brochures, press releases, conferences/events and social media etc.

You should:
- Explain why climate change matters to you (for more information visit: www.carbonfootprint.com/warming.html)
- Tell the story of where you have come from, the progress you have made and what your commitment is for the future (e.g. targets).
- Be clear and accurate about what you have achieved – take care not to exaggerate.
- Use the Carbon Footprint Standard branding, certificates, images of offset projects you are supporting and graphs of your carbon performance to help communicate your point in a clear and enticing manner.

6. References

1. BEIS GHG Conversion Factors for Company Reporting (June 2020)
2. Guidelines to Defra's Greenhouse Gas (GHG) Conversion Factors for Company Reporting – annexes (June 2013)
3. The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, Revised Edition (March 2004)
4. Association of Issuing Bodies (AIB) (2020)
5. CIBSE/UCL Energy Institute: An Analysis of Display Energy Certificates for Public Buildings, 2008 to 2012 (December 2013)

A. Annex A – Calculation Methodology (Additional Notes)

A.1 How is the carbon footprint calculated?

Carbon Footprint confirms that the methodology used to quantify the carbon footprint meets the following principles:

a) The subject and its boundaries have been clearly identified and documented.
b) The carbon footprint has been based on primary activity data unless the entity could not demonstrate that it was not practicable to do so, in which case an authoritative source of secondary data relevant to the subject was used.
c) The methodology employed minimised uncertainty and yielded accurate, consistent and reproducible results.
d) Emission factors used are germane to the activity concerned and current at the time of quantification.
e) Conversion of non-CO_2 greenhouse gases to CO_2e has been based upon the 100-year Global Warming Potential figures published by the IPCC or national (Government) publication.
f) Carbon footprint calculations have been made exclusive of any purchases of carbon offsets.
g) All carbon footprints have been expressed as an absolute amount in tCO_2e.

A.2 Biomass

There are no CO_2 emissions from the combustion of biomass to be considered within this report.

A.3 Greenhouse gas removals

Within the calculation of The Print Space's carbon footprint, there are no business processes resulting in the reduction of greenhouse gases from the atmosphere to be deducted from the calculation.

B. Annex B – Supplied Data and Emissions Breakdown

This annex shows the data that The Print Space has supplied Carbon Footprint Ltd for the calculation of its emissions. At the end of each table one or several columns have been added that display the emissions and calculations associated for each item of data provided by The Print Space. It should be noted that the latter has been calculated by Carbon Footprint Ltd, and not provided by The Print Space.

B.1 Data used for Scope 1 emissions assessment

This section contains the data related to the direct emissions attributable to The Print Space. These include the energy usage in The Print Space's buildings (excluding purchased electricity, since this corresponds to Scope 2, indirect emissions), any company owned vehicle transport and any of the other six greenhouse gases produced.

Table 13: Data supplied and emissions breakdown for company owned van transportation

Registration Plate	Make	Model	Engine Size (cc)	Fuel Type	Emissions Rating (gCO$_2$/km)	Travel Distance (mile)	Emissions (tCO$_2$e)
YL08OFV	Ford	Transit	2,198	Diesel (retail)	208	2,618	1.08

B.2 Data used for Scope 2 emissions assessment

This section contains the data associated to the energy indirect emissions attributable to The Print Space. The table below shows the purchased electricity, heat or steam usage in The Print Space's buildings.

Table 14: Data supplied and emissions breakdown for purchased electricity usage

Site Name	No. of staff	Grid Electricity	Unit	Country	Electricity Generation (tCO$_2$e)
The Print Space	13	49,307	kWh	United Kingdom	11.50
London Picture Framing	8	34,515	kWh	United Kingdom	8.05
Finance & Marketing (Hoxton)	6	9,156	kWh	United Kingdom	2.13
The Print Space Germany	3	32,987	kWh	Germany	12.49
Total	**30**	**125,965**			**34.17**

B.3 Data used for Scope 3 emissions assessment

The tables below demonstrate the company's employee business travel (not including staff commuting), any outsourced transport, and emissions from the transmission and distribution of purchased energy.

Table 15: Data supplied and emissions breakdown for staff business travel by train

Train Type	No. of Passenger Trips	Origin	Destination	Return Trip?	Cost (£)	passenger km	Emissions (tCO$_2$e)
National rail	1	Royston	London City Airport	No	-	87.89	0.003
National rail	1	London City Airport	Royston	No	-	87.89	0.003
National rail	1	Royston	Kingscross	No	-	87.40	0.003
National rail	1	Kingscross	Royston	No	-	87.40	0.003
National rail	1	Royston	Kingscross	No	-	87.40	0.003
National rail	1	Kingscross	Royston	No	-	87.40	0.003
National rail	1	Royston	City Airport	No	-	87.89	0.003
National rail	1	Kingscross	Royston	No	-	87.40	0.003

Train Type	No. of Passenger Trips	Origin	Destination	Return Trip?	Cost (£)	passenger km	Emissions (tCO$_2$e)
Light rail and tram	1	Hoxton	City airport	No	-	12.12	0.000
National rail	1	Royston	Gatwick	No	-	117.38	0.004
National rail	1	Gatwick	Royston	No	-	117.38	0.004
National rail	1	London	Stansted	No	-	57.42	0.002
National rail	1	Royston	Kingscross	No	-	87.40	0.003
National rail	2	Hoxton	City Airport	No	-	24.24	0.001
National rail	1	Royston	Kingscross	No	-	87.40	0.003
National rail	1	Kingscross	Royston	No	-	87.40	0.003
National rail	1	Royston	Kingscross	No	-	87.40	0.003
National rail	1	Kingscross	Royston	No	-	87.40	0.003
National rail	1	Heathrow	Royston	No	-	71.92	0.003
National rail	1	Kingscross	Royston	No	-	87.40	0.003
London Underground	1	-	-	-	£20.00	0.00	0.005
National rail	1	Oxford	London	Yes	-	202.68	0.007
National rail	1	Hastings	London	Yes	-	188.02	0.007
National rail	1	Hastings	London	Yes	-	188.02	0.007
London Underground	1	-	-	-	£4.80	0.00	0.001
National rail	2	London	Gatwick	No	-	86.94	0.003
National rail	1	-	-	Yes	£41.40	0.00	0.013
London Underground	1	-	-	-	£20.00	0.00	0.005
National rail	1	-	-	-	£2.40	0.00	0.001
National rail	1	-	-	-	£4.80	0.00	0.002
National rail	1	-	-	-	£4.80	0.00	0.002

26 March 2021

Train Type	No. of Passenger Trips	Origin	Destination	Return Trip?	Cost (£)	passenger km	Emissions (tCO₂e)
London Underground	1	-	-	-	£20.00	0.00	0.005
National rail	1	-	-	No	£6.00	0.00	0.002
National rail	1	Oxford	London	Yes	-	202.68	0.007
National rail	1	Oxford	London	Yes	-	202.68	0.007
National rail	1	Oxford	London	Yes	-	202.68	0.007
National rail	1	Hoxton	City Airport	No	-	12.12	0.000
National rail	1	Hoxton	City Airport	No	-	12.12	0.000
National rail	1	-	-	-	£7.20	0.00	0.002
National rail	1	-	-	-	£4.80	0.00	0.002
National rail	1	Oxford	London	Yes	-	202.68	0.007
National rail	1	-	-	-	£2.40	0.00	0.001
National rail	1	-	-	-	£4.80	0.00	0.002
National rail	1	-	-	-	£4.80	0.00	0.002
National rail	1	-	-	-	£7.20	0.00	0.002
National rail	1	-	-	-	£20.00	0.00	0.006
National rail	2	-	-	-	£6.22	0.00	0.002
Total	**50**				**£181.62**	**3126.15**	**0.17**

Commercial in Confidence
Issue 1.0
26 March 2021

Table 16: Data supplied and emissions breakdown for staff business flights

No. of passenger trips	Type	Return Trip?	Leg 1 Airport Name	Leg 2 Airport Name	Leg 1 Country	Leg 2 Country	Total Distance (km)	Total Emissions (tCO$_2$e)
2	Economy	Yes	London Gatwick	Duesseldorf	UK	Germany	485	0.30
1	Economy	Yes	London Heathrow	Duesseldorf	UK	Germany	502	0.15
1	Economy	Yes	London Gatwick	Berlin	UK	Germany	933	0.29
1	Economy	Yes	Duesseldorf	London City	Germany	UK	466	0.14
1	Economy	Yes	Duesseldorf	London City	Germany	UK	466	0.14
1	Economy	Yes	London City	Duesseldorf	UK	Germany	466	0.14
1	Economy	Yes	London City	Duesseldorf	UK	Germany	466	0.14
1	Economy	Yes	Duesseldorf	London Stansted	Germany	UK	456	0.14
2	Economy	Yes	London City	Duesseldorf	UK	Germany	466	0.29
2	Economy	Yes	London City	Duesseldorf	UK	Germany	466	0.29
1	Economy	NO	London City	Duesseldorf	UK	Germany	466	0.07
1	Economy	NO	London City	Duesseldorf	UK	Germany	466	0.07
2	Economy	Yes	London City	Duesseldorf	UK	Germany	466	0.29
2	Economy	Yes	London City	Duesseldorf	UK	Germany	466	0.29
1	Economy	NO	London Heathrow	Duesseldorf	UK	Germany	502	0.08
1	Economy	Yes	London City	Duesseldorf	UK	Germany	466	0.14
1	Economy	Yes	London Gatwick	Duesseldorf	UK	Germany	485	0.15
1	Economy	Yes	London City	Duesseldorf	UK	Germany	466	0.14
1	Economy	Yes	London City	Duesseldorf	UK	Germany	466	0.14
1	Economy	Yes	London Heathrow	Duesseldorf	UK	Germany	502	0.15
25							**9,922**	**3.54**

Issue 1.0
26 March 2021

Table 17: Data supplied and emissions breakdown for staff business travel by taxi

Type of Taxi	Annual cost (£)	No of Journeys	Departure	Destination	Distance (km)	Passenger Distance (km)	Emissions (tCO$_2$e)
Regular taxi	£18.20	11	Dusseldorf airport	TPS Jahnstrasse 18	10.10	111.10	0.0162
Regular taxi	£18.20	11	TPS Jahnstrasse 18	Dusseldorf airport	10.10	111.10	0.0162
Regular Taxi	£26.24	1	Dusseldorf airport	TPS Jahnstrasse 18	10.10	10.10	0.0015
Regular Taxi	£31.70	1	TPS Jahnstrasse 18	Dusseldorf airport	10.10	10.10	0.0015
Regular Taxi	£28.00	1	Dusseldorf airport	TPS Jahnstrasse 18	10.10	10.10	0.0015
Regular Taxi	£10.40	1	Dusseldorf	Dusseldorf	5.00	5.00	0.0007
Regular Taxi	£10.00	1	Dusseldorf	Dusseldorf	5.00	5.00	0.0007
Regular Taxi	£1,082.92	55	see list	-	-	1149.96	0.1673
Regular Taxi	£423.76	30	see list	-	-	420.61	0.0612
Total	**£1,649.42**	**112**			**60.50**	**1833.07**	**0.27**

Table 18: Data supplied and emissions breakdown for outsourced freight

Type of transport	Product type	Tonne.km	Tonnes of CO$_2$e
Air freight	Prints	6,446	7.31
	Frames	1,570	1.78
Road freight (van)	Prints	1,870	1.15
Total		**9,886**	**10.24**

Table 19: Data supplied and emissions breakdown for the transmission and distribution of purchased electricity.

Site Name	No. of staff	Grid Electricity	Unit	Country	Electricity Transmission & Distribution (tCO$_2$e)
theprintspace	13	49,307	kWh	United Kingdom	0.99
London Picture Framing	8	34,515	kWh	United Kingdom	0.69
Finance & Marketing (Hoxton)	6	9,156	kWh	United Kingdom	0.18
Theprintspace Germany	3	32,987	kWh	Germany	0.73
Total	**30**	**125,965**			**2.59**

Table 20: Data supplied and emissions breakdown for home-workers.

Home-worker type (occupancy during working hours)	No. of home-workers of this type	Home-work hours per day	Home-work days per week	Home-work weeks per year	Country	Electricity Generation (tCO$_2$e)	Electricity Transmission & Distribution (tCO$_2$e)	Natural Gas (tCO$_2$e)	Total Emissions (tCO$_2$e)
Single-occupancy	5	9.0	5	15	United Kingdom	0.09	0.01	1.32	1.41
Shared home space	7	9.0	5	15	United Kingdom	0.12	0.01	0.00	0.13
Shared home space	1	9.0	5	15	Spain	0.02	0.00	0.00	0.02
Shared home space	1	9.0	5	15	South Africa	0.07	0.01	0.00	0.08
Single-occupancy	1	9.0	5	15	Italy	0.03	0.00	0.26	0.29
15						**0.32**	**0.03**	**1.58**	**1.94**

Table 21: Data supplied and emissions breakdown for waste.

Site	Type of Waste	Waste Produced (tonnes)	Total emissions (tCO$_2$e)
TPS	Residual	6.5	0.14
	Recyclable	11.2	0.24
LPF	Residual	52	1.11
	Recyclable	15.6	0.33
TPS DE	Residual	1.95	0.04
	Recyclable	3.3	0.07
Total		**90.55**	**1.93**

Table 22: Data supplied and emissions breakdown water and wastewater.

Site	Water supply (m^3)	Water Supply (tCO$_2$e)	Estimated wastewater %	Wastewater treatment (tCO$_2$e)	Total emissions from water consumption (tCO$_2$e)
TPS	381	0.13	100%	0.27	0.40
LPF	45	0.02	100%	0.03	0.05
TPS DE	80	0.03	100%	0.06	0.08
Totals	**506**	**0.17**		**0.36**	**0.53**

B.4 Scope 1 emissions breakdowns

The table below demonstrates the company's Scope 1 CO$_2$e emissions in their respective greenhouse gases.

Table 23: CO$_2$e Emissions breakdown for Scope 1 emissions into their greenhouse gases.

Activity	kg CO$_2$e	kg CO$_2$ in CO$_2$e	kg CH$_4$ in CO$_2$e	kg N$_2$O in CO$_2$e
Company van travel	1077.04	1062.71	0.13	14.21