

Your operational carbon footprint

Reporting company: **ARC UK Technologies Limited**

Reporting company number: 4799773

Reporting years: 1st Jan – 31st Dec 2021 & 2022 forecast

Facilities included: Arches 181-182 Hercules Road, London,
SE1 7LD (2021 only)

Unit 5 Woodlands Court Business Park, Bristol
Road, Bridgewater TA6 4FJ (2021 & 2022)

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Dartford DA1 5XS (2022 only)

CarbonQuota project no: 50126

Contents

Description	Page
A guide to key terminology used	3
Executive summary	4
Section 1 – Your carbon baseline	5 - 8
Section 2 – Your action plan	9 – 13
Section 3 – Carbon Neutral	14 - 20
Section 4 – Disclosure and marketing	21 - 23
Section 5 – Appendix	24 - 30

About this report

We have taken summary data provided by yourselves, but we were not provided with full back-up evidence for spot checking. However, we found no evidence to suggest the data were not materially correct. The data are in line with what we would expect compared to the wider industry. We therefore believe this report is a fair representation of your carbon footprint.

But you still know your business better than we do, so please verify the data presented in this report carefully, in particular checking the data tables are correct and that the information we have gathered from you is a true and accurate representation of what happens in your organisation. If any of the data results are not in line with what you expect, please let us and know and we can investigate with you.

This report covers your operational carbon footprint, limited to the carbon emissions associated with the energy and processes that you directly control in your buildings and company vehicles. If you have provided details, it also includes the carbon footprint of your staff when they are commuting to work, on business travel, or working at home.

It does not cover the carbon footprint of activities that you do not directly control such as printing substrates, consumables, other goods and services you purchase, sub-contracting, capital goods, waste, external transport, or end-of-life of sold products.

First...a guide to key terminology used

CO2e

Emissions of greenhouse gases into the atmosphere by human activities is the main cause of climate change. The main culprit is a greenhouse gas called carbon dioxide, or simply carbon, often abbreviated to CO₂, but there are other important greenhouse gases. Wherever you see 'CO₂e', this is short for 'carbon dioxide equivalents' which is the standard unit of measure for carbon footprints. It includes carbon dioxide as well as the other most important greenhouse gases created by human activities that contribute to climate change (i.e. methane, nitrous oxide and fluorinated gases) as determined by the UN's Intergovernmental Panel on Climate Change.

Location-based & Market-based

This is relevant if you purchase 100% renewable electricity such as solar or wind from your energy provider. If so, then your carbon footprint for that proportion of electricity is zero. Your energy provider is obliged to generate or purchase enough 100% renewable electricity from specific and guaranteed sources to sell to you. This is known as a 'market-based' measurement. However, because electricity still comes from the grid, your carbon footprint at the point of use is technically the same as the national average. This is known as a 'location-based' measurement. If you generate electricity from your own solar panels (or wind turbine etc), that electricity has a zero carbon footprint on both the market-based and location-based measurement.

Please refer to the 'Carbon Disclosure' section to see what is relevant if you present your Scope 1 & 2 carbon footprint to a customer, regulatory body, or international platform.

Scopes 1 & 2

Scope 1 and 2 greenhouse gas emissions are those that an organisation is directly (or closely) responsible for.

Scope 1: on-site combustion of gas and oil; fuel for company vehicles; industrial releases of greenhouse gases (e.g. carbon dioxide); unintended greenhouse gas leakage (e.g. refrigeration).

Scope 2: the purchase of electricity (or steam, heating or cooling) that is generated by a third party and imported to a facility.

Scope 3

Scope 3 covers all other greenhouse gas emissions associated with an organisation, such as:

- Upstream and downstream supply chain.
- The processing, use & end-of-life of products sold to another organisation / consumer.
- Business travel and commuting
- The purchase of capital goods
- The carbon emissions associated with leases, franchises and investments (where not already included in scope 1 or 2).

Executive summary



CarbonQuota has measured your carbon footprint in your operations. Here's what we found.

Creating a baseline

It is good to see your data is well organised, which makes it easier to play your part in the low-carbon economy. You now have a robust carbon baseline against which to monitor energy and carbon reduction initiatives.

Your sustainability story

Now you have a baseline, you can start to tell your story to customers and stakeholders. You will be able to measure and report trends in coming years, so the next step is to put measures in place that will reduce your carbon footprint.

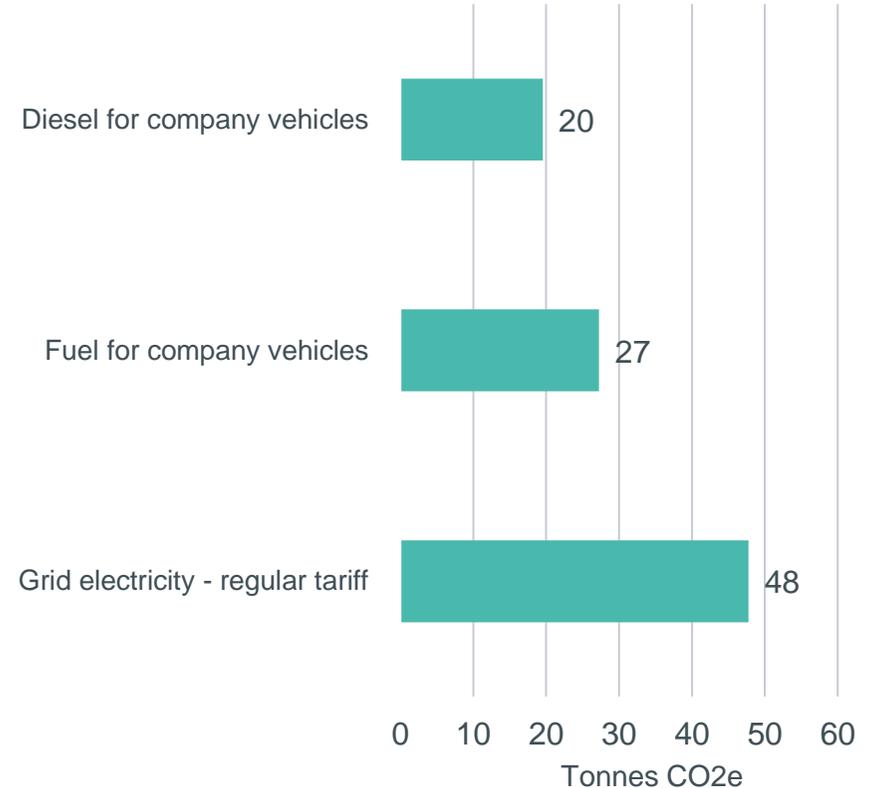
Carbon Neutral

This report provides signposts for how you can reduce your carbon footprint to achieve Carbon Neutral status. To meet the international standards, you must commit to a number of areas, which are shown below.

Three urgent things to do

1. Switch to 100% renewable electricity immediately.
2. Transition your fleet to electric vehicles, maybe stepping via hybrid.
3. Installing on-site solar (if your building is suitable).

Your carbon hotspots in 2021



Section 1

Your carbon baseline

Your operational carbon footprint

Your operational carbon footprint is the sum of the absolute carbon emissions associated with your buildings and vehicles.

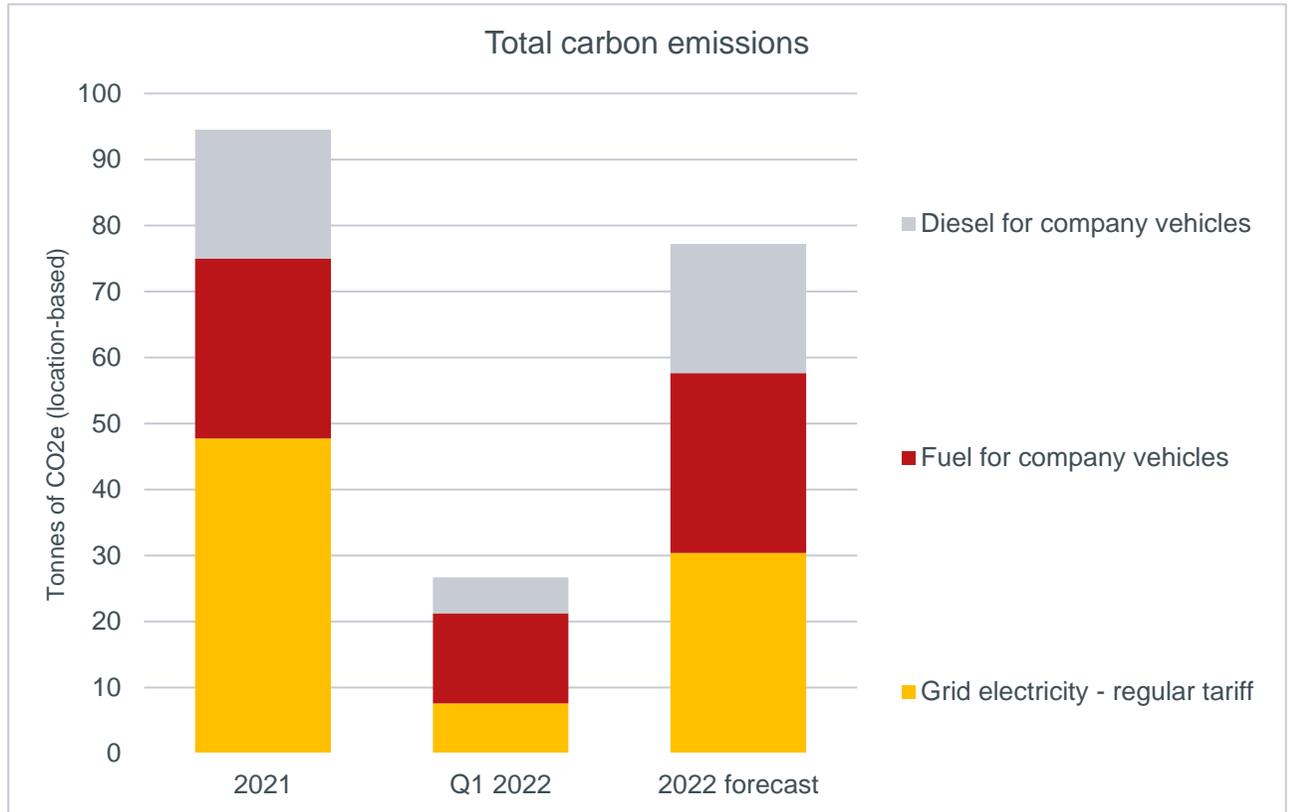
Commentary

Your carbon footprint is dominated by both electricity and fuel for company vehicles.

Your number one priority should be switching to a 100% renewable contract with your electricity supplier. This is a quick win which would mean your carbon footprint for this will become zero in general terms. The majority of manufacturers we work with have either switched to 100% renewable electricity, or are seriously considering it.

However, even with a 100% renewable tariff, you are still using national electricity, which will contain some fossil fuels and still have a carbon footprint. Therefore, you should consider installing as many solar panels as possible depending on your building as a long-term investment. This is the ultimate way to reduce your full carbon footprint as much as possible. Some providers will be able to finance this for you, so you don't have to make the up-front investment. This means that solar is always a cost-saving initiative as well as reducing your carbon footprint.

Using company vehicles is a significant contributor to your carbon footprint. Many manufacturers like you are planning to phase out diesel and petrol vehicles with electric. In some cases, it is more financially viable to step via hybrid vehicles.



Carbon intensity ratios

Intensity ratios are ‘key performance indicators’ for carbon efficiency regardless of the size of a business. Carbon intensity is calculated by dividing the total tonnes of absolute CO2e by the relevant quantity of each metric.

Commentary

In general, your ratios are getting slightly better so you need to find more ways to continue this trend.

We consider the carbon emissions per tonne of substrate purchased to be the most important measurement for you. You are worse than the industry average. In other words, you use a more carbon per tonne of substrate compared to the average printer. We expect the industry average to reduce by 10-15% by this time next year.

These ratios assume that you are financially careful. In other words, you don't buy too much substrate, don't occupy too much space, don't price too high and don't employ too many people.

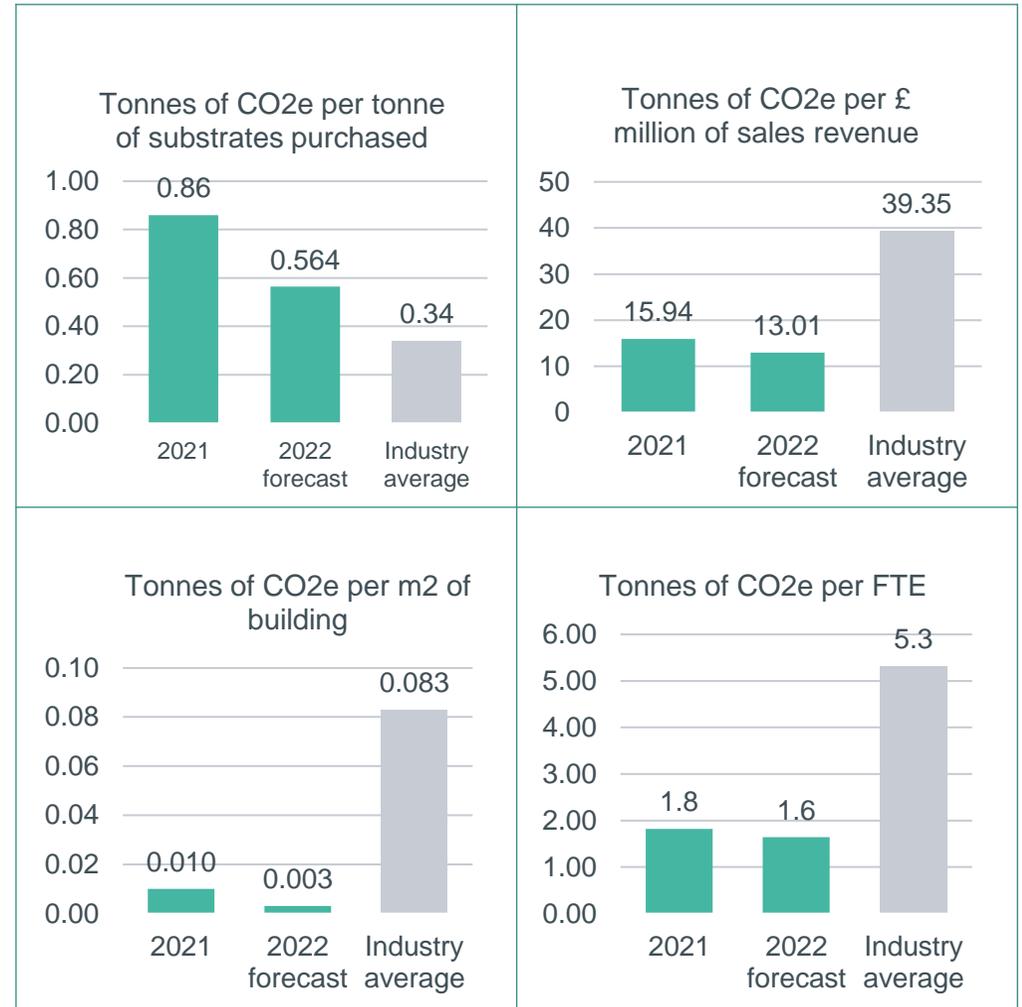
Industry averages are sourced from CarbonQuota's database of 'Printing' companies for 2020. Averages are based on a market-based assessment, where the electricity for organisations that pay a premium for 100% renewable tariff are reported as zero carbon footprint.

What to do with these numbers

These carbon intensity ratios are a great measure against which to assess improvement projects and investments.

These are the kinds of metrics that your customers will use to assess you in the coming years, because it will help them identify suppliers that are moving to a more sustainable business model.

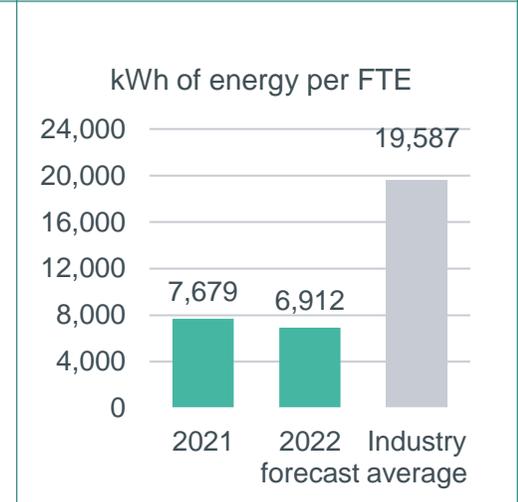
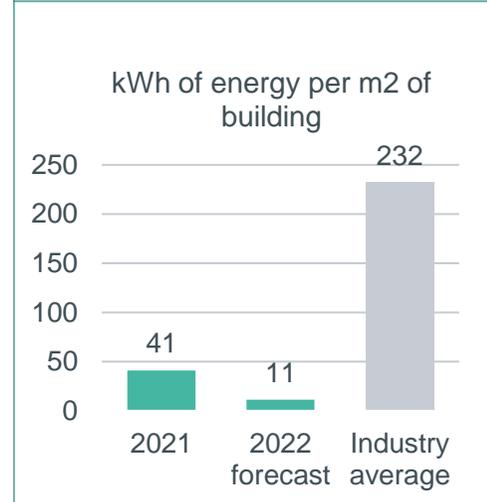
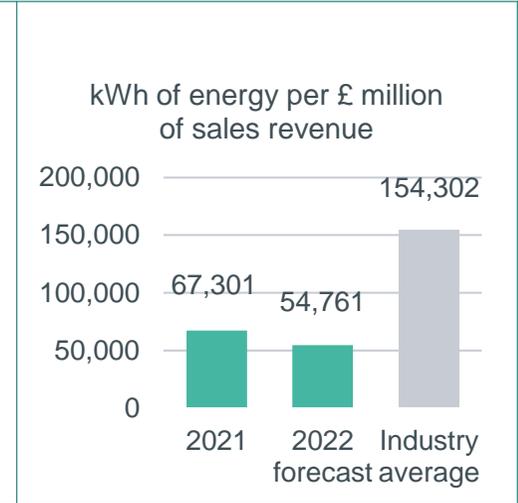
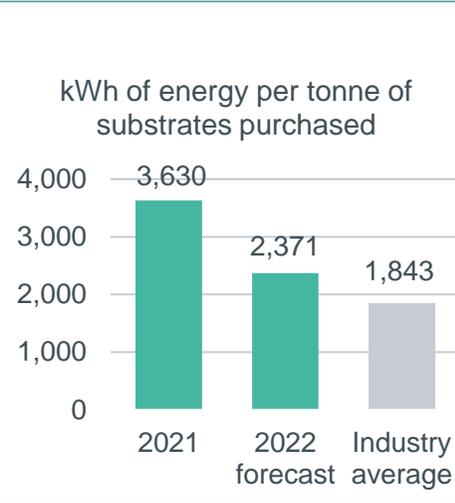
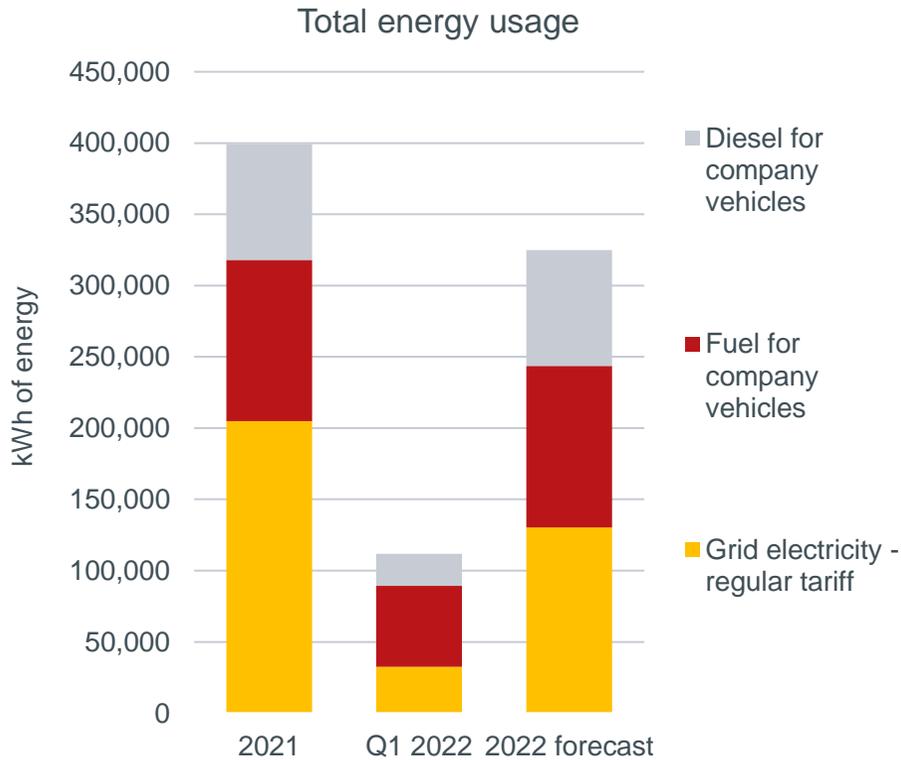
You should therefore set aggressive targets and highlight these results with your staff and customers.



Your energy usage & intensity

Energy efficiency will always be important, whether from renewable or non-renewable resources.

Maximising energy efficiency is mission critical for your carbon reduction journey. Please refer to the ideas below to see what else you can do.



See data tables for details

Section 2

Your action plan

What next?

Our top tips for planning for a future where carbon accounting is normal

SENIOR LEADERSHIP

Embed carbon reduction and sustainability in your DNA.

Reward staff for lower-carbon decisions.

Accept that carbon reduction is a real and permanent cost.

Invest time in handling the hassle factor and Director's responsibilities.

Lead staff across some uncomfortable boundaries.

FURTHER CARBON REPORTING

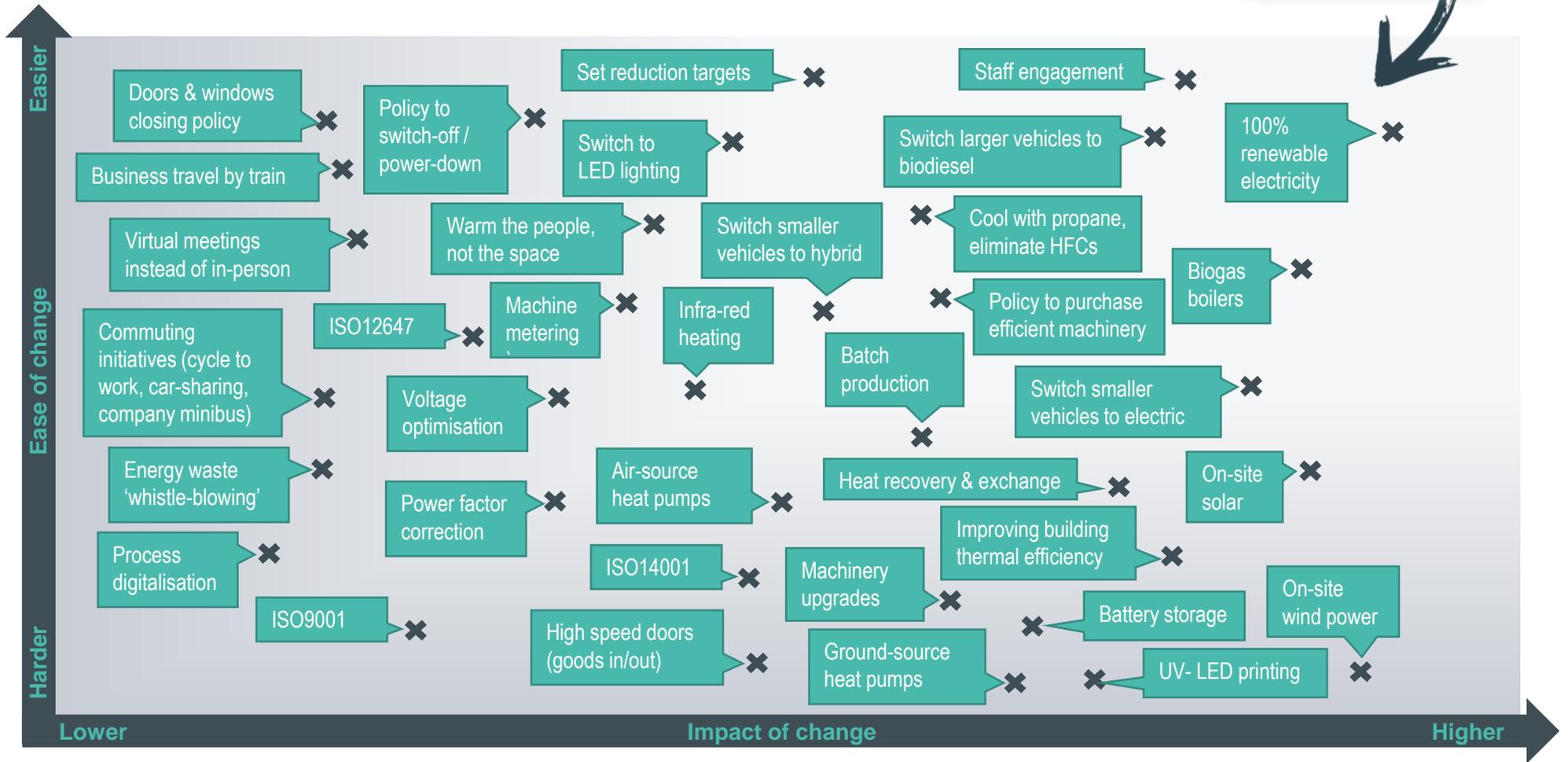
We recommend you begin assessing the following categories of your operations

- Waste generated by your operation
- Commuting & working from home
 - Other business travel
- Purchasing of capital goods (e.g. machines)

Other ideas

We have ranked the top thirty initiatives across the print industry that are improving energy efficiency and reducing carbon footprints. How do you compare?

The easiest and most impactful changes for the print sector are towards the top right corner.



Other ways CarbonQuota can help you



Operational carbon footprint assessment



Substrate & consumables advisory



Product life cycle assessment



Carbon footprints on quotes and invoices



Carbon Calculators



Supply chain assessments



Product portfolio assessments



Environmental consultancy



Carbon reduction certification



Carbon labelling



Offsetting



Carbon neutral and net zero claims

Other specialists that can help you

We can refer you to specialist services to help you manage your energy, carbon and sustainability performance (click the logos) 



GBP provide low-emission alternatives for diesel engines, including on-site tanks.



ETS provide energy management, efficiency projects and building services.



Planet-U specialise in renewable energy projects, energy procurement and associated technology.



Energy Efficiency Experts arrange zero capital outlay solar systems, with long term energy savings from your own green energy.



Novaloop provide product compliance services, including producer responsibility.



Certified Sustainable provide waste management, recycling services and reporting.



Profit Impact provides the sustainability perspective to financial growth and reporting.

Workplace Insights

Workplace Insights monitors and manages building energy performance to reduce energy and carbon footprints.

Section 3

Carbon Neutral

Carbon Neutral

The international standards for businesses that have achieved the Carbon Neutral status require complete and ongoing commitment. As your carbon measurement provider, we will ask you to prove your commitments are being fulfilled.

Your Carbon Neutral status will be withdrawn at the next anniversary if any of the commitments are not met.

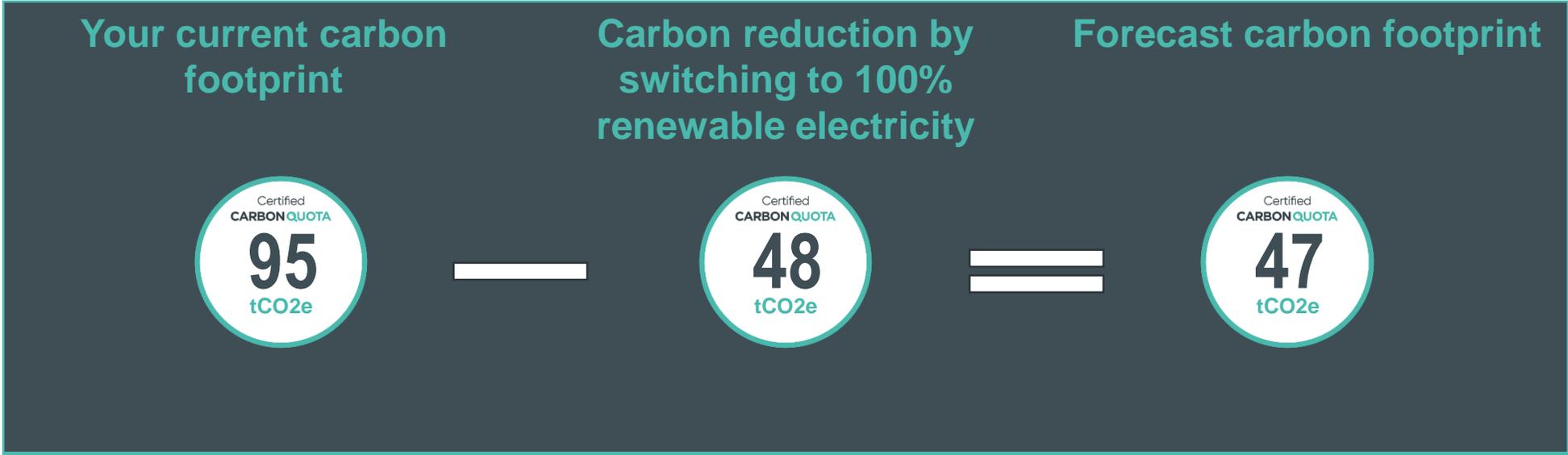


Your commitments

- ✓ Switch to a 100% renewable electricity tariff as soon as your contract will allow and maximise solar by 2030.
- ✓ Document a plan to replace company vehicles with EV.
- ✓ Document your carbon reduction and energy efficiency plan with defined and timebound initiatives.
- ✓ Gain approval of your carbon reduction strategy from a company Director.
- ✓ Offset your residual emissions with high quality carbon offsets (see below).
- ✓ Publicise your carbon reduction strategy in a prominent place on your website.
- ✓ Repeat your operational carbon footprint annually.
- ✓ Put a process in place to monitor reductions, and implement corrective actions if necessary.
- ✓ Implement a plan to review other categories (see Action Plan)

Carbon Neutral status for the next year

We have forecast your carbon footprint based on what would happen if you switched to 100% renewable electricity.



Carbon offset contract

Once you purchase carbon offsets, Carbon Neutral status can be used in your marketing to demonstrate your commitment to a Net-Zero pathway and to round off your environmental credentials. However this is not a replacement for making deep and rapid emissions cuts.

Quality

When purchasing carbon offsets, we act with integrity and relevance. There are different offset methodologies, in different places, with different benefits to the local community, and different vintages. Like wine, some are better than others and our framework has been designed to secure high quality offsets.

Deep and rapid cuts in your footprint

We have built our offsetting process to be robust and in line with the highest international standards. However, we appeal to all our customers to first make deep and rapid cuts in carbon emissions and set targets.

The split of our offset Portfolio

The current split of our offset portfolio is shown in the chart to the right. This is subject to change at any time in order to maintain the highest standards.

Six-monthly check

We will liaise with you after six months to check you are on track with your commitments.

Contract terms

Carbon Neutral certification from CarbonQuota is only valid for 12 months. You must repeat the process every 12 months, when a reconciliation process will take place regarding the cost of carbon offsets. You must prove adequate progress against commitments to retain certification. You must use CarbonQuota's offsetting service.

You understand that the cost of offsets is set to rise. High quality offsets cost approximately \$20 today. The real cost is however believed by economists to be \$75. Observers expect offset costs to increase by over \$10 per year until 2030.

To meet PAS2050/2060 standards we need to keep your records for six years.

Risk

Our framework exists to provide you with environmental integrity to the highest level. However any sustainability claims that are not well thought through by your organisation can attract negative publicity or accusations of greenwashing, and you need to accept this risk. Please contact CarbonQuota for guidance if you are uncertain.

Fees

🔍 **£1,710 for 12 months**

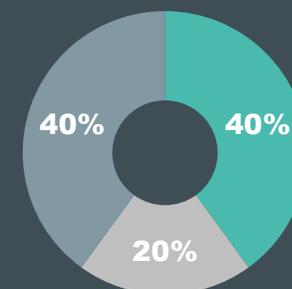
95 tCO₂e x £18.00

Carbon offsets are currently invoiced excluding VAT.

We will process the purchasing of the carbon offsets once funds have cleared our bank accounts.

Invoicing will be made in GBP.

The split of our offset Portfolio



- Tropical mix in Panama
- Pacajai REDD Project in Brazil
- Wind Project in Gujarat, India

Tropical Mix in Panama

Degraded land, originally forest land, later used for extensive cattle ranching, is reforested with mostly native tree species and gradually converted into mixed forests. The project provides sustainable timber production and cocoa cultivation; it protects biodiversity and restores a healthy forest ecosystem. Sustainable forest management and cocoa production offer employment opportunities, therefore improve the economic and social situation of rural communities and families. Tropical Mix has been one of the first in line to be successfully certified under the renowned Gold Standard for land use and forestry projects. The cocoa production areas have been the first agroforestry systems to be certified under the Gold Standard. In addition, the forest management received FSC certification (Forest Stewardship Council) and the cocoa production is UTZ and EU organic certified.



Social benefits

- Long-term and fair employment for local communities (more than 150 jobs created so far)
- Integrated capacity building and environmental education programmes
- Sustainable sources of income: sale of certified tropical timber, carbon credits, cocoa and seed material
- Supporting local schools with financial programs and educational materials

Ecological benefits

- Reforestation with 20 native tree species and protecting more than 30 other tree species
- Biodiversity "hotspot": home to 15 endangered and vulnerable animal species, including brown-throated sloths and anteaters
- > 25 % of project area is under special protection as conservation area
- Creating ecological corridors between different project locations



Pacajai REDD Project in Brazil

The Amazon's ecosystems play a critical role in stabilising the climate – providing food, water and vital medicines for all of us across the globe. The main goal of the project is to safeguard these resources from destruction. The Pacajai project owns and protects almost 150,000 ha – an area almost the size of London – of High Conservation Value rainforest in the Portel municipality in the region of Pará, Brazil. Since 2008, the Pacajai project has worked with families from the Ribeirinhos community to facilitate their land use rights and stewardship in an area of the Brazilian rainforest that is being logged illegally and at a very rapid tempo. The project supports local capacity building and enables the transition of legal land-ownership rights from government-owned forests to local families for conservation. Project partners work in trusted partnership with over 6,200 Ribeirinhos river people that live and work within the project area.



Social benefits

- Collaboration with Amazonian University who will provide social care, wellbeing and mental health education
- Facilitating development of techniques which improve drinking water quality
- Trainings in sustainable agriculture and horticulture
- Work with the Pará state government to help Ribeirinhos communities gain legal title and full rights to their land
- Improved infrastructure (roads, health facilities and schools)

Ecological benefits

- Implementing sustainable production of honey, cassava, black pepper, açai fruit, manioc flour, medicine and essential oils as new crops
- Protecting 30 vulnerable species including the giant anteater and the blackhanded tamarind
- Maintaining integrity of biological diversity between project area and the surrounding
- Provision of natural resources and ecosystem services



Wind Project in Gujarat, India

The Wind Energy project was developed by Vish Wind Infrastructure LLP (“VWIL”), an independent power producer owned by the promoters of Wind World (India) Ltd. The project deploys 63 units of WTGs of Enercon technology, and delivers an annual average of 107 GWh of green electricity to the regional grid. It not only addresses the power demand–supply gap in the state of Gujarat, but also assists in sustainable growth, conservation of resources, and reduction of greenhouse gas emissions into the atmosphere. The project contributes to an approximate reduction of 101,234 tonnes of CO2 emissions per year by displacing an equivalent amount of electricity generation at the grid. In the absence of this project, the equivalent amount of electricity would have been generated from conventional power plants based on fossil fuels. With the implementation of the project, the local communities have been benefited with employment, health, education, improved infrastructure, socio-economic development etc. in the region.



Benefits

- Local employment generation
- Free preventive health care support to the villagers
- Local infrastructure development
- Support to the primary education through digital platform
- Facilitation of safe drinking water systems at schools and elsewhere
- The project has reached more than 5000 households
- More than 25000 villagers are being covered under preventive health care
- 6 Primary schools are supported with e-learning Labs
- More than 1500 students have access to a digital learning platform.
- More than 20 people are employed with the project activity.
- More than 100 local people were engaged as unskilled laborers during the construction phase.
- More than 10 different trainings and workshops have been conducted in last 2 years for qualitative employment development.



Section 4

Disclosure and marketing

Disclosing your carbon footprint

When your customers ask

It is becoming normal to disclose your carbon footprint to your customers. This can be in statutory reports, in responses to enquiries, and on public directories.

Question	2021	Q1 2022	2022 Forecast
What are your scope 1 emissions?	46.80	19.09	46.08
What are your scope 2 emissions (market-based)?	47.74	7.60	30.40
What are your scope 2 emissions (location-based)?	47.74	7.60	30.40
What are your total scope 1 & 2 emissions (market-based)?	94.55	26.69	77.20
What are your total scope 1 & 2 emissions (location-based)?	94.55	26.69	77.20

External Assessment – what to say about this process

We have appointed CarbonQuota to independently assess the accuracy, completeness and consistency of energy use and carbon footprint calculations within the operations under our direct control.



Being asked about your Scope 3 emissions, or need more help? Contact info@carbonquota.co.uk

Marketing toolkit – certificate and logos

You can start using the phrase “Carbon Neutral” on the basis you will switch your electricity from regular tariff to a 100% renewable tariff. Below are the certificate and logo for you to use.



The certificate template features a teal header with the text "Carbon Neutral certification" and a circular logo on the right that reads "Certified CARBON QUOTA CARBON NEUTRAL OPERATION". Below the header, there is a paragraph certifying the assessment of greenhouse gas emissions. A table provides details for a sample company, including its name, facility, latest emissions, and date. To the right of the table, there is a paragraph explaining the operational boundaries and measurement period. At the bottom left, the "CARBON QUOTA" logo is displayed on a dark teal background.

Carbon Neutral certification

This certifies that CarbonQuota has assessed the greenhouse gas emissions of the following operation, which meets the PAS2060 standard for Carbon Neutral.

Company:	Sample
Facility:	Sample road
Latest greenhouse gas emissions:	Location-based: XX tonnes CO ₂ e Market-based: XX
Date:	2022

The operational boundaries of this study comprise the Scope 1 GHG emissions associated with natural gas, fuel for company vehicles and Scope 2 GHG emissions associated with market-based purchased electricity. All additional Scope 1, 2 and 3 GHG emissions were excluded.

The period 1st January to 31st December 2021 was measured and used as a guide to pre-purchase sufficient carbon credits from CarbonQuota's Portfolio for the anticipated emissions during 2022. These will be reconciled and retired on the relevant registries by 31st January 2023.

CarbonQuota Portfolio projects:
Pacajai REDD+, Brazil (Verra Project 981)
Tropical Mix, Panama (Gold Standard Project 2940)
Green Infra Wind Gujarat, India (Gold Standard Project 7795)

CARBON QUOTA



What you can say

Our direct operations are Carbon Neutral. We have committed to a carbon reduction plan and offset our residual carbon emissions (certified: CarbonQuota 2022)

Section 5

Appendix

Results tables – input data

Activity / metric	Spot check status	Source data	
		2021	Q1 2022
Diesel for company vehicles (scope 1)	Not checked	7,675 litres	2,143 litres
Fuel for company vehicles (via expenses) (scope 1)	Not checked	£12,792.00	£6,396.00
Grid electricity - regular tariff (scope 2)	Checked	204,788	32,598
Tonnes of substrates purchased	N/A	110	137
m ² footprint of buildings	N/A	9,854	30,004
Sales revenue	N/A	£5,932,775	
Full Time Employees	N/A	52	

Results table – carbon footprint

Activity	Scope	Tonnes CO2e	
		2021	Q1 2022
Diesel for company vehicles (scope 1)	1	19.54	5.46
Fuel for company vehicles (via expenses)	1	27.26	13.63
Grid electricity - regular tariff	2	47.74	7.60
TOTAL (location-based)		94.55	26.69

Results table – energy usage

Activity	Converted to kWh	
	2021	Q1 2022
Diesel for company vehicles (scope 1)	81,202	22,673
Fuel for company vehicles (via expenses)	113,293	56,646
Grid electricity - regular tariff	204,788	32,598
TOTAL	399,282	111,917

Results tables – intensity ratios

Carbon intensity ratios (yours are location-based, industry average is market-based*)

Metric	2021	Industry average (2020)	Comparison to industry
Tonnes CO2e per tonne of substrates purchased	0.86	0.34	Worse than average
Tonnes CO2e per £ million sales revenue	15.94	39.35	Better than average
Tonnes CO2e per m ² footprint of buildings	0.010	0.083	Better than average
Tonnes CO2e per full time employee	1.82	5.33	Better than average

Energy intensity ratios

Metric	2021	Industry average (2020)	Comparison to industry
kWh per tonne of substrates purchased	3,630	1,843	Worse than average
kWh per £ million sales revenue	67,301	154,302	Better than average
kWh per m ² footprint of buildings	41	232	Better than average
kWh per full time employee	7,679	19,587	Better than average

*Carbon intensity ratio industry averages are based on a market-based assessment, where the electricity for organisations that pay a premium for 100% renewable tariff are reported as zero carbon footprint. Industry averages are sourced from CarbonQuota's database of 'Printing' companies for 2020.

Appendix – carbon footprinting approach

Operational and organisational boundaries

The operational boundaries of this study comprise the scope 1 GHG emissions associated with fuel for company vehicles and scope 2 GHG emissions associated with purchased electricity. All other scope 3 GHG categories were excluded.

The organisational boundaries of this study comprise the facilities noted on the cover sheet. The consolidation of facility level GHG emissions was undertaken using the operational control approach.

There are no GHG removals and reservoirs within operational and organisational boundaries.

Methodology

In carrying out carbon footprint calculations and preparing this document, CarbonQuota has followed the general principles of the Greenhouse Gas Protocol (Corporate Standard), with further guidance from the Greenhouse Gas Protocol (Corporate Value Chain Accounting and Reporting Standard).

Within the organisational boundaries, a consistent approach was used to quantify and to document GHG emissions and removals by completing, as applicable, the following steps: (1) Identification of GHG sources and sinks was carried out using CarbonQuota's industry expertise and previous experience, and guidance from international publications such as the GHG Protocol; (2) The selected quantification method is based on the multiplication of GHG activity data by GHG emission or removal factors, which was thought to be the most appropriate approach for this study; (3)

The GHG activity data were collected from activity data used consistent with the quantification methods; (4) Selection or development of GHG emission or removal factors - the most appropriate and current GHG emission factors have been selected from the European Environment Agency's Dataset upto 2019, Defra/DECC 2020 greenhouse gas conversion factor repository (Defra/DECC 2019 used for 2018-2019 reporting year); (5) the calculations of the GHG emissions and removals have been carried out by multiplying the GHG activity data by GHG emission or removal factors. These calculations have been undertaken in a Microsoft Excel model.

The following underlying primary data were used to provide summarised data to CarbonQuota for calculating the carbon footprint and energy footprint: utility company bills; supplier invoices; expense claims.

All IPCC 2007 GHGs were considered in the calculation of this organisational carbon footprint, which were converted to carbon dioxide equivalents (CO₂e) using the 2007 IPCC Global Warming Potentials (GWPs). Whilst more recent IPCC GWPs are available, the latest version of the main source of secondary data used in this study (i.e. Defra) currently uses IPCC 2007 GWPs.

The calculations were assured on behalf of CarbonQuota by Dr Matt Fishwick who found no evidence to suggest that they were not materially correct and were not a fair representation of the GHG data and information.

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