Carbon Footprint Appraisal Report

Assessment Period:
1st October 2019 - 30th September 2020

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Executive Summary

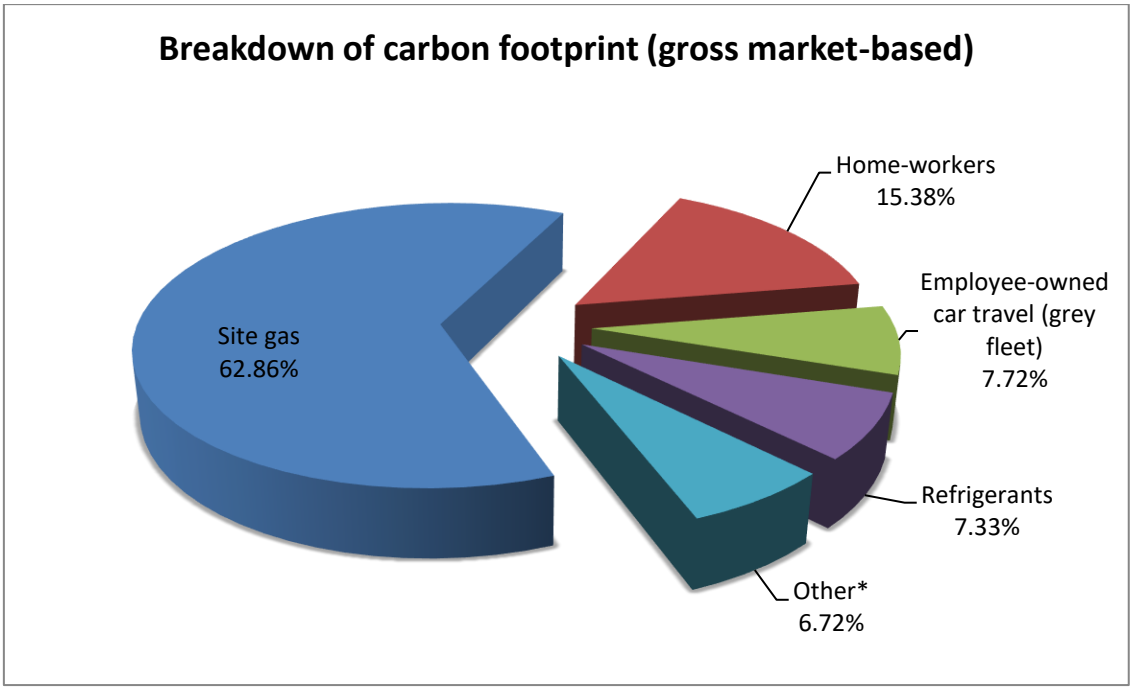
Carbon Footprint Ltd has assessed the greenhouse gas (GHG) emissions of Zen Internet Ltd (henceforth referred to as Zen) from 1st October 2019 to 30th September 2020 based on a dataset provided by the company.

Current Performance

- Zen's gross market-based footprint has decreased by 81.63% in terms of absolute tCO_2e; 62.35% by tCO_2e per employee; and 82.95% by tCO_2e per £M turnover.
- The most significant emission source is site gas, accounting for 62.86% of Zen's gross market-based carbon footprint.

Recommendations

- Offset GHG emissions to compensate for Zen's emissions by funding climate solution projects. This will also enable Zen to maintain its Carbon Neutral status.
- 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.
- Carry out an energy audit to help identify areas with the greatest opportunities for savings. Carbon Footprint are able to assist with this if required.
- Consider the feasibility of providing an electric pool car for staff to use instead of personal vehicles (the average trip distance and real-world driving ranges will need to be taken into account).



* 'Other' constitutes water (and wastewater); site gas oil; company car travel; hire cars; rail travel; flights; waste; paper; and taxi travel.

The table below provides a summary of market and location-based emissions compared to the baseline year.

	Baseline Year (2018/19)		Current Year (2019/20)		% change from baseline year	
	Market-based	Location-based	Market-based	Location-based	Market-based	Location-based
Total Tonnes CO_2e	3,644.99	4,573.92	515.98	2,046.38	**-81.63%**	**-55.26%**
Tonnes of CO_2e per employee	3.31	4.16	0.96	3.80	**-62.35%**	**-8.65%**
Tonnes of CO_2e per £M turnover	47.96	60.18	6.30	24.97	**-82.95%**	**-58.51%**
Amount deducted due to 'green gas' supply[1]	0.00	0.00	56.37	56.37	-	-
Zen carbon offsets	12,743[2]	12,743	tbc	tbc	-	-
Total Net Tonnes of CO_2e	**-9,098.01**	**-8,169.08**	**459.61**	**1,990.01**	-	-

[1] Source: www.brookgreensupply.com/supply.

[2] In the baseline year, Zen offset their total tCO_2e and a retrospective estimation of their previous GHG emissions (from date of establishment) based on the intensity metrics calculated within the baseline assessment.

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Quality Control

Report issue number:	1.0
Date:	05 February 2021
Calculations completed by:	Zoe Booth
Calculations reviewed by:	Georgina Whitlock and Rebecca Pattison
Report produced by:	Zoe Booth
Report reviewed by:	Georgina Whitlock
Director approval:	John Buckley

1. Introduction

1.1. Company Overview

Zen Internet Ltd (henceforth referred to as Zen) is a large telecoms provider based in Rochdale. It has two office sites (Sandbrook Park HQ and Moss Bridge Road) and utilises five outsourced data centres. Zen has also chosen to include the outsourced 450 BT exchanges it uses. Due to the nature of the business, energy use and air conditioning units on site (particularly within the data centres) are the key areas of business operation which contribute to the company's carbon footprint.

Zen already holds ISO 14001 and B Corp certification, and has now completed its second carbon footprint assessment, as detailed throughout this document.

1.2. Zen Internet'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. Zen Internet has completed the first step of its annual carbon management journey.

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**[3]. In addition to this, poor air quality and issues of clean water availability leave us 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 Zen Internet 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. Greenhouse Gas Protocol Corporate Standard

This GHG calculation and report has been prepared in accordance with The Greenhouse Gas Protocol Corporate Standard. The GHG inventory, report, or assertion has not been separately verified.

Location-based approach – reflects the emissions from electricity coming from the national grid energy supply.

Market-based approach – reflects the emissions from the electricity sources or products that the consumer has specifically chosen.

1.7. Calculation methodology

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

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

Carbon Footprint's analysts have calculated the majority of Zen'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). 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. Emissions have been calculated using both a location-based and market-based approach.

Location-based approach – uses the average energy generation emission factor for the UK.

Market-based approach – uses the energy generation emission factor which reflects the energy contract.

For the location-based approach, Defra 2020 conversion factors were used for the whole calculation. To calculate the market-based emissions, the renewable electricity tariff (supplied by Haven Power) at Zen's sites is taken into account.

1.8. Data supplied for the carbon footprint appraisal

A summary of the data supplied by Zen Internet for the appraisal is presented in Annex B.

1.9. Abbreviations

A/C	Air Conditioning
ANPR	Automatic Number Plate Recognition
BEIS	Department for Business Energy & Industrial Strategy
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
CSR	Corporate Social Responsibility
Defra	Department for Environment, Food and Rural Affairs
EU	European Union
EV	Electric Vehicle
GHG	Greenhouse Gas
IPCC	Intergovernmental Panel on Climate Change
ISO	International Standards Organisation
km	Kilometres
kWh	Kilowatt Hours
PHEV	Plug-in Hybrid Electric Vehicle
PR	Public Relations
UN	United Nations
WEEE	Waste Electrical and Electronic Equipment
WCN	Waste Consignment Note
WTN	Waste Transfer Note

2. Calculation Scope and Accuracy

2.1. Scope of this work

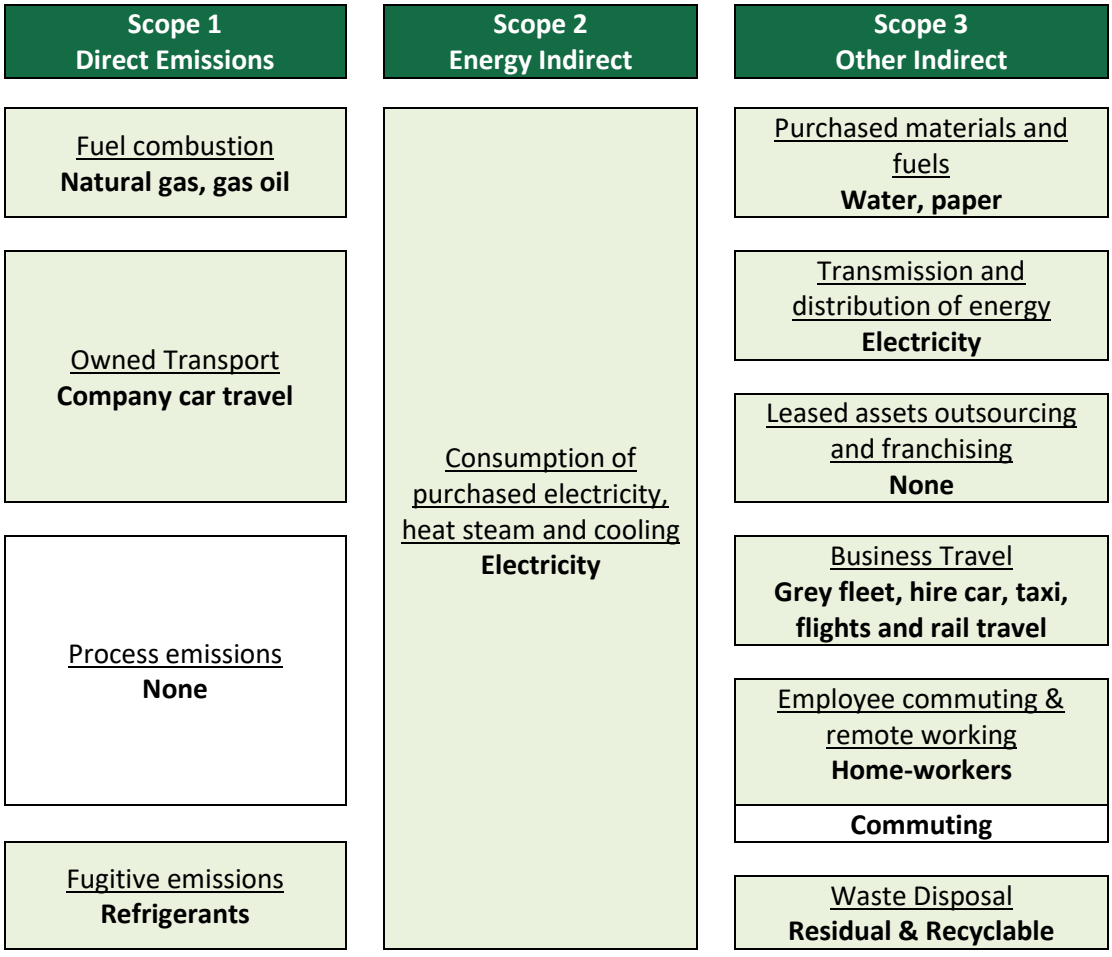
Carbon Footprint has assessed the GHG emissions from 1st October 2019 to 30th September 2020 resulting from the energy consumption at Zen's facilities and its business transport activities.

The majority of this report will focus on the market-based GHG emissions as these reflect Zen's supplier choices. Location-based results have been used as a comparison point, to reflect upon actual consumption, and in line with GHG Protocol dual-reporting guidance.

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



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.

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 Zen Internet (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. This is based on consumption data (kWh) and therefore shows the error margin in relation to the respective location-based emissions.

Table 3: Assessment accuracy, materiality and simple error analysis (location-based)

Dataset	Source of data and comments	Accuracy	Materiality	Uncertainty	Estimated Error Margin (tCO_2e)[4]
Outsourced site electricity	Consumption data (kWh) was apportioned to Zen's use (by outsourced providers) and provided via email.	Good	Very High (>35%)	10%	196.78
Site electricity	Consumption data (kWh) was provided from half-hourly (HH) bills for both sites. Moss Bridge Road site was sold in March 2020 so only occupied for 6 months of the data period.	Excellent	Very High (>35%)	1%	15.30
Site gas	Consumption data (kWh) was provided from bills. Moss Bridge Road site was sold in March 2020 so only occupied for 6 months of the data period. Evidence was provided showing Sandbrook Park being on a "green gas" supply for April to September.	Excellent	Medium (5-10%)	1%	3.24
Home-workers	Estimated number of home-workers provided alongside hours working at home per week. Carbon Footprint Ltd has used assumptions on electrical equipment used during the working day and heating requirements.	Estimated	Low (1-5%)	90%	71.42
Employee-owned car travel (grey fleet)	Vehicle type and mileages were provided from the ANPR system and expenses. Where employees have left the business, car details were no longer available. However, correct mileages were provided.	Good	Very Low (<1%)	10%	3.98
Refrigerants	Type of gas and amount refilled (kg) were sourced from leak reports.	Very Good	Very Low (<1%)	5%	1.89
Water (and wastewater)	Consumption data (m^3) provided for the majority of the data period for both sites and pro-rated to cover the missing data.	Good	Very Low (<1%)	10%	1.60
Site gas oil	Quantity sourced from invoiced purchases.	Excellent	Very Low (<1%)	1%	0.07
Company car travel	Vehicle type and mileages were provided from the company car log and mileage claims.	Very Good	Very Low (<1%)	5%	0.20

[4] Based on the market-based footprint.

Dataset	Source of data and comments	Accuracy	Materiality	Uncertainty	Estimated Error Margin (tCO_2e)[4]
Hire cars	Car details and mileage was sourced from hire car reports from the provider.	Good	Very Low (<1%)	10%	0.35
Rail travel	Origin and destination data provided from internal records.	Excellent	Very Low (<1%)	1%	0.02
Flights	Origin and destination airports, along with cabin class were provided from internal records.	Excellent	Very Low (<1%)	1%	0.01
Waste	Tonnes of waste, split by category, were provided from Waste Transfer Notes (WTN).	Excellent	Very Low (<1%)	1%	0.01
Paper	The number of reams purchased during the data period was provided. As assumption of 500 sheets per ream at 80gsm was used to calculate emissions.	Good	Very Low (<1%)	10%	0.05
Taxi travel	Origin and destination data provided from internal records.	Excellent	Very Low (<1%)	1%	<0.01
Total				**+/- 7%**	**+/- 294.92**

The majority of data provided by Zen is Good to Excellent quality with regards to accuracy. Evidence was provided for the most material elements of the carbon footprint. For recommendations to improve data accuracy, please see Section 5.

3. Carbon Footprint Results

3.1. Summary of results

The gross total market-based carbon footprint for Zen, for the period ending 30th September 2020, was 515.98 tonnes CO_2e. Table 4 provides a summary of results for Zen's carbon footprint calculation by scope and source activity.

Table 4: Results of Zen Internet's carbon footprint assessment by scope and source activity

Scope	Activity	Market-based (Tonnes CO_2e)	Location-based (Tonnes CO_2e)
Scope 1	Site gas	324.35	324.35
	Refrigerants	37.80	37.80
	Site gas oil	6.89	6.89
	Company car travel	3.98	3.98
Scope 1 Sub Total		**373.02**	**373.02**
Scope 2	Electricity generation	0.00	1,409.21
Scope 2 Sub Total		**0.00**	**1,409.21**
Scope 3	Electricity transmission & distribution (Zen sites only)	0.00	121.19
	Home-workers	79.36	79.36
	Employee-owned car travel (grey fleet)	39.81	39.81
	Water (and wastewater)	16.01	16.01
	Hire cars	3.46	3.46
	Rail travel	1.75	1.75
	Flights	1.08	1.08
	Waste	0.73	0.73
	Paper	0.48	0.48
	Taxi travel	0.28	0.28
	Outsourced site electricity (generation + t&d)	0.00	1,967.76
Scope 3 Sub Total		**142.96**	**2,231.91**
Total gross tonnes of CO_2e		**515.98**	**4,014.14**
Tonnes of CO_2e per employee		**0.96**	**7.46**
Tonnes of CO_2e per £M turnover		**6.30**	**48.98**
Amount deducted due to 'green gas' supply		**-56.37**	**-56.37**
Total net tonnes of CO_2e[5] (excluding carbon offsets purchased by Zen)		**459.61**	**3,957.77**

Figures 2 and 3 show the breakdown of the total gross market-based GHG emissions produced by Zen, whilst Figure 4 shows the gross location-based breakdown. Under the market-based method, gas consumption accounts for the majority of emissions (62.9%), with energy use from home-workers

[5] Total net tonnes of CO_2e shows the total gross tCO_2e minus GHG emissions associated with natural gas consumption at the Sandbrook Park site (April – September) as this was supplied by Brook Green who offset all customer gas. Source: www.brookgreensupply.com/supply

equating to 15.4%. Grey fleet and refrigerants account for a similar proportion of emissions at 7.7% and 7.3%, respectively. Comparatively, the GHG emissions associated with waste, water, paper, gas oil use (for an on-site generator) and other business travel (company cars, hire cars, rail, air and taxi travel) is much lower, with a combined total of 6.7% of the footprint.

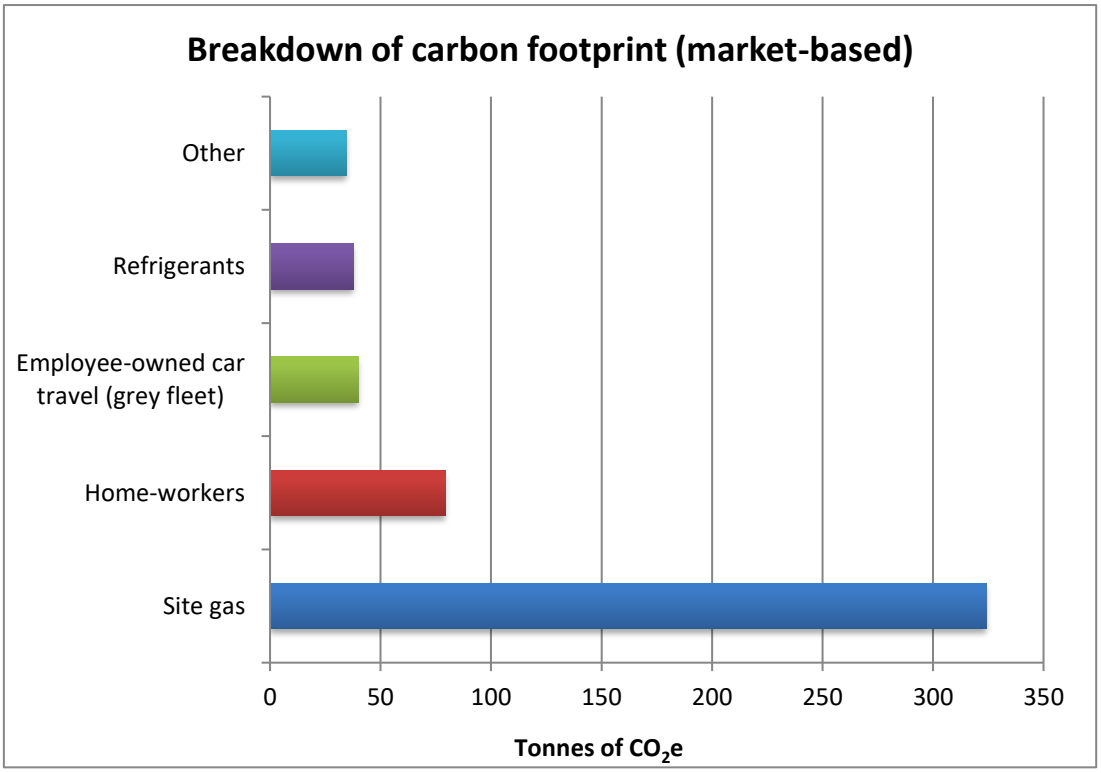


Figure 2: Contribution in tonnes of CO_2e of each element of Zen Internet's carbon footprint[6]

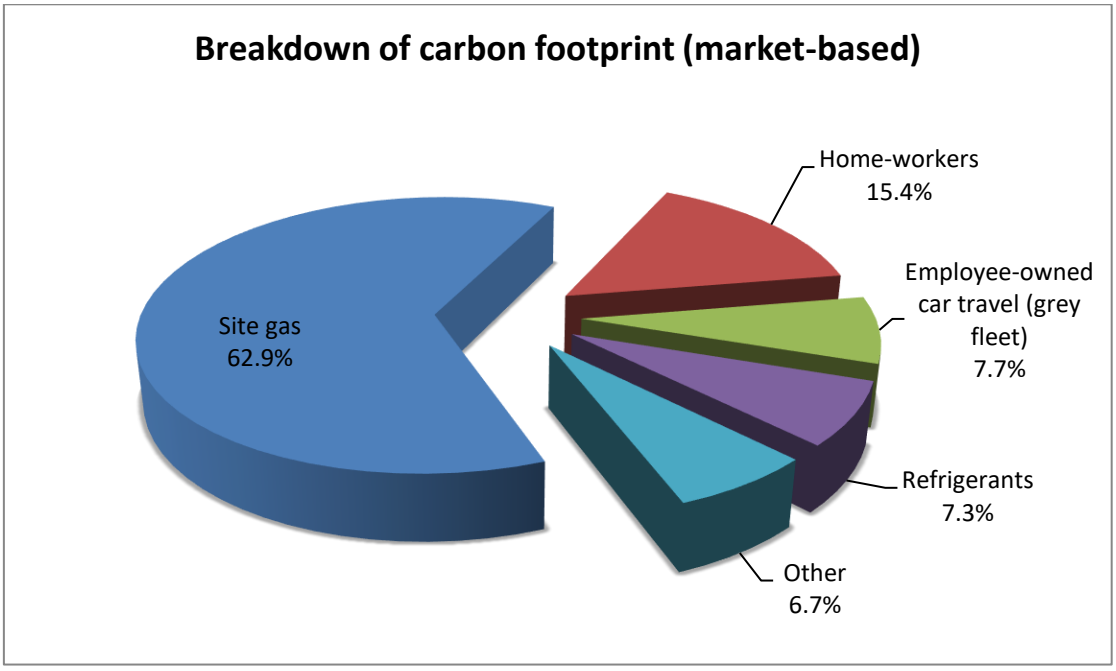


Figure 3: Percentage contribution of each element of Zen Internet's carbon footprint

[6] Market-based "other" refers to water (and wastewater); site gas oil; company car travel; hire cars; rail travel; flights; waste; paper; and taxi travel.

Using the location-based method, site utilities (electricity and gas) equate to a combined 95.2% of the total footprint (see Figure 4). "Other" with regards to the location-based footprint comprises home-workers, employee-owned car travel, refrigerants, water (and wastewater), site gas oil, company car, hire car, rail, air and taxi travel, along with waste and paper. Combined, these account for less than 5% of Zen's location-based footprint.

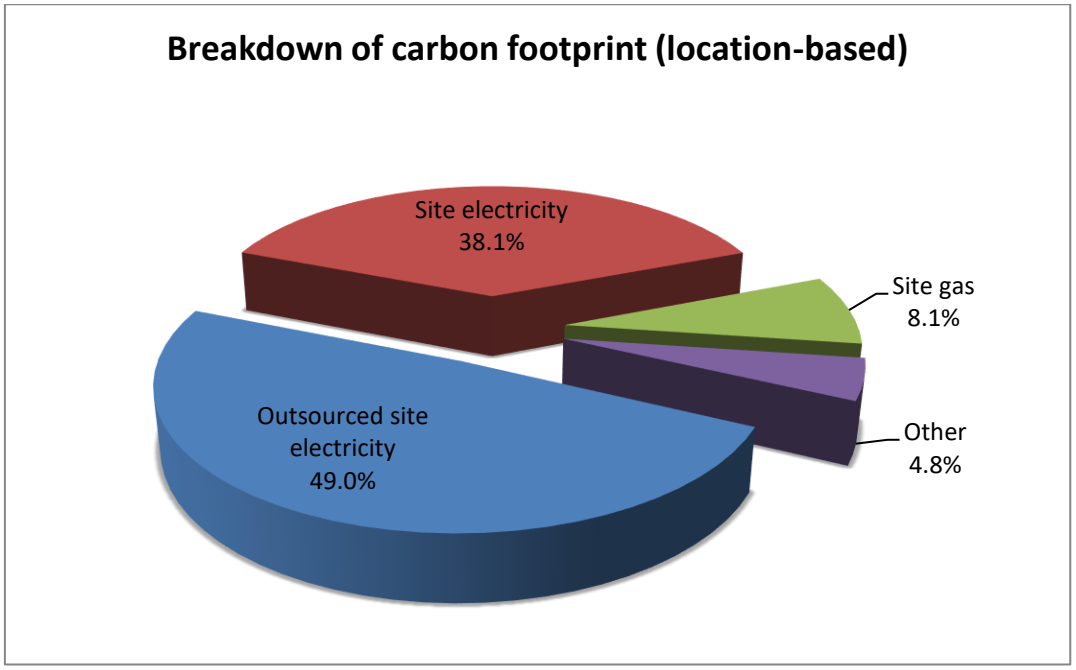


Figure 4: Percentage contribution of each element of Zen Internet's carbon footprint[7]

3.2. Emissions from energy usage at site facilities

Zen has two offices in the UK (Sandbrook Park HQ and Moss Bridge Road), and utilises storage across five main data centres which are outsourced. In addition to these sites, Zen has chosen to include energy used under its BT exchanges to give a more accurate representation of the company's emissions. This decision is in line with the previous assessment scope. Zen's own sites utilise electricity, gas and gas oil for energy, whilst outsourced sites utilise electricity only. It should also be noted that the Moss Bridge Road site was sold in March 2020, so was only in operation for 6 months of the data period.

In the previous assessment, all staff were based at the Sandbrook Park HQ site, whilst the Moss Bridge Road site was used ad-hoc whilst pending sale. However, government guidance issued as a result of the Covid-19 pandemic has meant the majority of staff have worked from home throughout this assessment period. To ensure that GHG emissions associated with Zen's office work are still captured, Zen has provided information regarding the number of home workers there were throughout the period. Carbon Footprint Ltd used this information to estimate emissions associated with home-working.

[7] Location-based "other" refers to home-workers; employee-owned car travel (grey fleet); refrigerants; water (and wastewater); site gas oil; company car travel; hire cars; rail travel; flights; waste; paper; and taxi travel.

Table 5 shows actual consumption data (kWh) for Zen's own sites. Table 6 and 7 show the breakdown of emissions from on-site energy usage at each of the sites. Sandbrook Park (HQ) produces the highest amount of site GHG emissions, with Moss Bridge Road producing the second highest emissions (using location-based methods). All outsourced data centres and Zen sites utilise renewable electricity tariffs and therefore have 0 CO_2e associated with electricity consumption on site (under market-based reporting). Although this is a positive supplier choice by Zen, they should continue to make energy efficiency improvements (such as their on-going replacement of lighting with LED lights) to their buildings to reduce energy demand.

Table 5: Market-based gross CO_2e emissions as a result of site energy consumption

Site	Electricity (kWh)	Gas (kWh)
Sandbrook Park *	5,989,436	1,722,840
Moss Bridge Road *	55,059	41,164
Total	**6,044,495**	**1,764,004**

Table 6: Market-based gross CO_2e emissions as a result of site energy consumption

Site	Electricity tCO_2e	Gas tCO_2e	Gas Oil tCO_2e	Total tCO_2e
Sandbrook Park *	0.00	316.78	6.89	323.67
Moss Bridge Road *	0.00	7.57	-	7.57
450 BT Exchanges	0.00	-	-	0.00
Telehouse	0.00	-	-	0.00
Virtus	0.00	-	-	0.00
Interxion	0.00	-	-	0.00
Equinix	0.00	-	-	0.00
AQL	0.00	-	-	0.00
Total	**0.00**	**324.35**	**6.89**	**331.24**

Table 7: Location-based gross CO_2e emissions as a result of site energy consumption

Site	Electricity tCO_2e	Gas tCO_2e	Gas Oil tCO_2e	Total tCO_2e
Sandbrook Park *	1,516.47	316.78	6.89	1,840.14
450 BT Exchanges	1,696.73	-	-	1,696.73
Telehouse	124.20	-	-	124.20
Virtus	74.30	-	-	74.30
Interxion	43.03	-	-	43.03
Equinix	27.95	-	-	27.95
Moss Bridge Road *	13.94	7.57	-	21.51
AQL	1.55	-	-	1.55
Total	**3,498.17**	**324.35**	**6.89**	**3,829.41**

* Zen Internet sites

As a result of Zen Internet and its data centre suppliers using renewable electricity tariffs, 3,498.17 tonnes of CO_2e have been avoided.

In addition to this, Zen switched the gas supplier at its Sandbrook Park site to Brook Green in April 2020. Brook Green offset their customer gas supply[8] and therefore the GHG emissions associated with gas supplied by Brook Green can be deducted from Zen's gross total GHG emissions. **The gross total emissions for gas supplied to Zen sites is 324.35 tCO_2e; the net total for gas supplied to Zen sites is 267.98 tCO_2e. *This reduces the total net market-based carbon footprint to 459.61 tCO_2e.***

3.3. Emissions from refrigerants

GHG emissions associated with A/C at Zen account for 7.3% of the total footprint (gross market-based) with a total of 37.8 tCO_2e. Due to the nature of the business, Zen requires A/C and therefore are unlikely to be able to reduce their use significantly. However, A/C systems are closed systems, which means if it is working optimally there should be no refrigerant leaks and no top ups required. I recommend Zen checks its operating procedures to ensure air-conditioning units are not being emptied and re-filled unnecessarily. Where large top ups are required during regular servicing, I strongly recommend that a thorough leak test/investigation is carried out to identify the cause and prevent further loss of refrigerant gas. Whilst the quantity required for top up due to leaks is 81.6% lower during this data period (2019/20) than the previous data period (2018/19), this still suggests that there are still ongoing or new issues.

Table 8: CO_2e emissions as a result of on-site refrigerant gas replenishment

CFP Data ID	Amount Refilled (kg)	Refrigerant type	GWP ($kgCO_2e$)	Emissions (tCO_2e)
Q001	13.0	HFC-134a	1,430	18.59
Q002	9.2	R410A	2,088	19.21
Total	**22.20**			**37.80**

3.4. Emissions from business travel

Figure 5 and Table 9 show the GHG emissions resulting from Zen's business travel. The largest contributor is car travel[9], accounting for 93.9% of the total transport emissions. Similar to the previous year (2018/19), grey fleet accounts for the majority of the car travel at 79.1% of the total transport footprint (84.2% of car emissions). Zen cannot control what type of vehicle employees personally own, but it can ensure there are no barriers for staff wishing to switch to electric vehicles (EVs), by installing EV charging points at its head office and by educating staff (e.g. on energy-efficient driving tips and where to find online maps showing locations of charge points). **I recommend Zen considers the feasibility of providing an electric pool car for staff to use instead of personal vehicles (the average trip distance and real-world driving ranges will need to be taken into account).**

Comparatively, rail and taxi travel account for a minimal proportion of the overall transport footprint at 3.5% and 0.5%, respectively. **Zen should encourage employees to opt for remote meetings and public transport, before deciding to travel by car.**

[8] Source: www.brookgreensupply.com/supply
[9] Company owned, employee-owned and hire cars combined.

The use of flights has reduced this year, with 94,008 fewer passenger km flown by Zen staff for business purposes. This has led to a 93.4% reduction of flight-related GHG emissions compared to the previous year. However, it should be noted that government guidelines and travel restrictions during the Covid-19 pandemic is likely to be the key factor in this reduction. I recommend Zen survey employees to evaluate how effective operations were with reduced flying, to determine a travel policy going forwards post-Covid19.

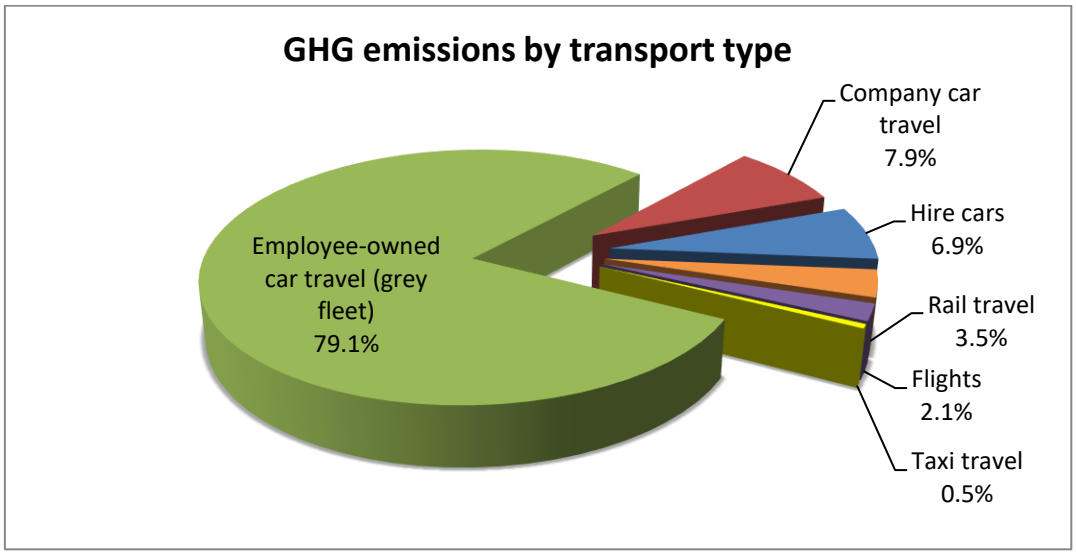


Figure 5: Percentage contribution of each element to transportation emissions

Table 9: CO_2e emissions due to transportation

Type of Travel / Transport	Tonnes of CO_2e
Employee-owned car travel (grey fleet)	39.81
Company car travel	3.98
Hire cars	3.46
Rail travel	1.75
Flights	1.08
Taxi travel	0.28
Total	**50.36**

3.5. Emissions from water supply and wastewater

Zen have provided water bills covering the complete data period for their two meters at the Sandbrook Park site and one meter at their Moss Bridge Road site. As with the previous year, the evidence provided shows that Water Plus charge for wastewater treatment based on the assumption that wastewater equates to 100% of the metered water supply (m^3). Therefore, this assumption has been used to calculate Zen's wastewater.

Sandbrook Park accounts for 99% of Zen's water consumption (m^3) the HQ site[10]. This is similar to the previous year, where Sandbrook Park accounted for 98% of the total water consumption.

[10] this has been the only site following the sale of Moss Bridge Road in March 2020.

Table 10: CO_2e emissions due to water consumption

Site	Water Supply (m^3)	Estimated wastewater (%)	Total Emissions from Water Consumption (tCO_2e)
Sandbrook Park	15,076	100	15.86
Moss Bridge Road	147	100	0.15
Total	**15,222**	**100**	**16.01**

3.6. Emissions from waste production

Table 11 provides a breakdown of the waste produced by Zen and the associated emissions. As with the previous year, this excludes cardboard waste produced by the company as they use a cardboard baler and store this in a separate room, for which the data was unavailable.

'Hazardous' waste produced by Zen consists solely of WEEE which is collected one to two times a year. Zen has provided their Waste Consignment Note (WCN) for WEEE collection as evidence of the quantity and recycling. In terms of tonnes, WEEE waste accounts for less than 1% of the total waste produced.

The majority of waste produced (61.4%) are recyclables; with residual and green (from food and drink) waste accounting for a lower proportion at 26.5% and 11.81% respectively.

Table 11: CO_2e emissions due to waste production

Type of Waste	Waste Produced (tonnes)	Total Emissions (tCO_2e)
Recyclable	22.35	0.48
Residual	9.66	0.21
Green	4.30	0.04
Hazardous (WEEE)	0.12	<0.01
Total	**36.42**	**0.73**

The detailed results are given in Annex B.

3.7. Emissions from paper consumption

Zen has provided data regarding the number of A4 paper reams purchased during the data period (Table 12). There was a total of 240 fewer reams purchased during this data period compared to the previous period. This is likely to be a result of a large proportion of staff working from home during the Covid-19 pandemic. I recommend Zen evaluates the need for printing and how effective it managed with using less paper, to avoid consumption increasing to post-Covid levels.

Table 12: CO_2e emissions due to paper consumption

Paper Type	Weight per ream (kg)	Number of reams	Total Emissions (tCO_2e)
Virgin Pulp – A4	2.36	220	0.48

4. Comparison and Benchmarking

4.1. Comparison to base year emissions

This is the second carbon footprint assessment Zen Internet has carried out. For the baseline year emission data, please refer to the 2018/19 report. Table 13 below shows Zen's historical emissions per activity, as well as their total carbon footprint and carbon intensity metrics (tonnes of CO_2e per employee and tonnes of CO_2e per £M turnover).

Table 13: Zen Internet's carbon footprint comparison (market-based) and percentage change

Element	Baseline Year (2018/19)	Current Year (2019/20)	% change on previous/baseline year
Site gas	403.81	324.35	-19.68%
Home-workers	-	79.36	n/a
Employee-owned car travel (grey fleet)	40.01	39.81	-0.50%
Refrigerants	205.71	37.80	-81.62%
Water (and wastewater)	18.91	16.01	-15.34%
Site gas oil	2.76 [11]	6.89	+149.64%
Company car travel	16.20	3.98	-75.43%
Hire cars	-	3.46	n/a
Rail travel	6.77	1.75	-74.15%
Flights	16.29	1.08	-93.37%
Waste	30.50	0.73	-97.61%
Paper	1.32	0.48	-63.64%
Taxi travel	0.39	0.28	-28.21%
Site electricity	333.19	0.00	-100.00%
Outsourced site electricity[12]	2,569.13	0.00	-100.00%
Total tonnes of CO_2e	**3,644.99**	**515.98**	**-85.84%**
Tonnes of CO_2e per employee	**3.31**	**0.96**	**-71.00%**
Tonnes of CO_2e per £M turnover	**47.96**	**6.30**	**-86.86%**

For the purposes of comparison, the baseline year and current location-based footprint can also be seen below (Table 14).

[11] Figure re-calculated following more accurate data during the 2019/20 period. In the baseline assessment, this was thought to be litres of diesel fuel but this has since been confirmed to be gas oil.

[12] Site electricity in the 2018/19 baseline report has been re-categorised into site electricity (which can be attributed to Zen's own sites) and outsourced site electricity (which can be attributed to outsourced services provided at third-party data centres and BT exchanges). This has been carried out to enable fairer and more accurate representation of Zen's emissions. As the data centres and BT exchanges are an outsourced service, this falls under Zen's Scope 3 GHG emissions.

Table 14: Zen Internet's carbon footprint comparison (location-based) and percentage change

	Baseline Year (2018/19)	Current Year (2019/20)	% change from baseline year
Total Tonnes CO_2e	4,573.92	2,046.38	**-55.26%**
Tonnes of CO_2e per employee	4.16	3.80	**-8.65%**
Tonnes of CO_2e per £M turnover	60.18	24.97	**-58.51%**

Zen has decreased its total gross market-based carbon footprint by 85.84% between this period (2019/20) and the baseline year (2018/19). Reductions can also be seen across both intensity metrics (see Figure 6), as well as the majority of individual elements. The greatest reduction in CO_2e can be seen through outsourced site electricity consumption as a result of renewable energy tariffs. Within the baseline assessment, electricity was either on a standard tariff, or provided evidence was not available for renewable energy tariffs. However, for the 2019/20 data period Zen were able to provide email evidence stating that all outsourced data centres are supplied by 100% renewable electricity tariffs. As a result, the associated GHG emissions under market-based reporting is zero; reducing the absolute emissions figure by 2,569.13 tonnes this year in comparison to the baseline year.

Zen's own sites have also seen a reduction in emissions from energy use. Market-based GHG emissions associated with electricity use at the Sandbrook Park and Moss Bridge Road sites were 0 tCO_2e (a reduction of 333.19 tCO_2e since the baseline year). This reduction is due to Moss Bridge Road being on a renewable electricity tariff from the beginning of the data period (1st October 2019) until the site was sold in March 2020. The Sandbrook Park is on a 100% renewable electricity tariff with Haven Power.

In addition to the switch to renewable electricity, a reduction of 693,047 kWh electricity consumption (10.37%) was seen at the Sandbrook Park site this year. This is partially due to a large proportion of staff working from home during Covid-19. However, Zen has also noted that it has taken a number of energy efficiency actions throughout the data period. These include replacing cooling pumps and upgrading cooling fans within its data centre, as well as continuing to upgrade lighting to LEDs across the site.

Reductions can also be seen in emissions associated with gas consumption, business travel, as well as water, waste and paper. This is likely to be largely a result of the reduction of staff working on-site, with the majority working from home in line with the government guidance and restrictions during the Covid-19 pandemic.

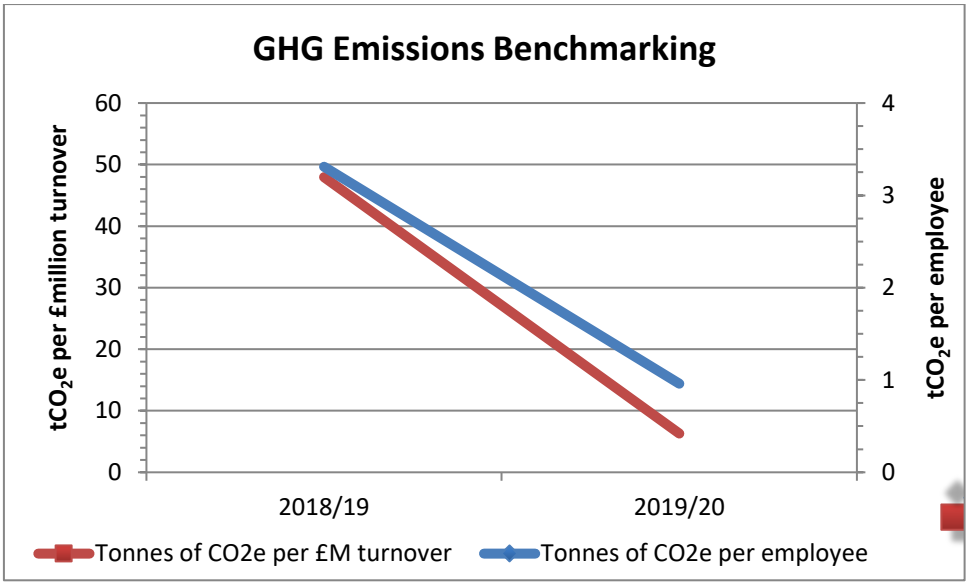


Figure 6: Carbon footprint of Zen Internet for internal benchmarks

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

4.2. External benchmarking

Table 15 provides emissions related information from a similar company within your industry. This can be used to compare your performance against others within the market sector. When making comparisons with external companies, we recommend focussing on Scope 1 and 2 intensity metrics as these show the direct emissions (and scope 2 indirect electricity and steam consumption) and there is typically less variance than in scope 3 reporting, making results are more comparable.

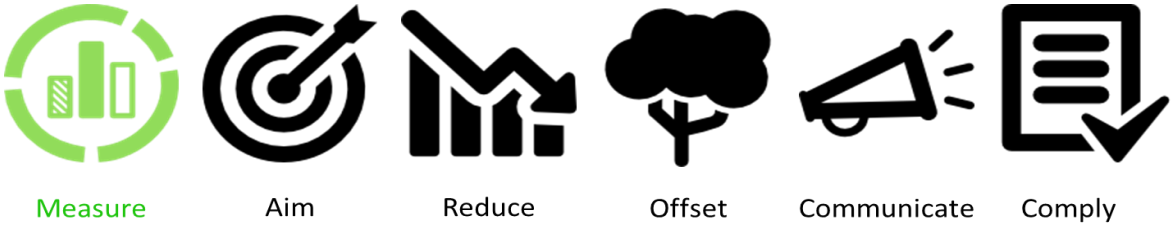
Table 15: Zen Internet's benchmarked GHG emissions

Year/Element	Zen Internet (2019/20)[13]	TalkTalk Group PLC (2020)
Turnover in £million	81.95	1,569[14]
Total number of employees	538	2,077
Tonnes of CO_2e	4,014.14	34,805
Tonnes of CO_2e per £ million	48.98	22.18
Tonnes of CO_2e per employee	7.46	16.76
Scope 1 & 2 Emissions		
Scope 1 & 2 tonnes CO_2e	1,782.23	7,882
Scope 1 & 2 tonnes CO_2e per £ million	21.75	5.02
Scope 1 & 2 tonnes CO_2e per employee	3.31	3.79

[13] Using location-based emissions to allow fair comparison
[14] Based on statutory revenue (2020)

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.



5.1. Carbon & sustainability targets

5.1.1. Target setting

Zen already has an Environmental Steering Group in place, including the CEO and a variety of managerial level employees, who are responsible for setting and achieving the company's goals and targets. For the FY20/21 year, their objectives include reducing energy use by 5%; reducing paper use in the office by 25%; as well as a number of investigative plans to identify reduction opportunities and to engage staff.

The Environmental Steering Group report progress on a monthly basis to the Executive Committee and the Board. We strongly recommend that Zen maintain this continual review process and amend targets accordingly (e.g. internal targets can be increased if met ahead of schedule to accelerate progress). We also 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. **Carbon Footprint Ltd can provide support with setting appropriate targets for your business. For further information please speak to your account manager.**

5.1.2. Improving the accuracy of future carbon footprint assessments

The estimated overall error margin is +/- 295 tCO_2e, equating to 7% of the total gross market-based footprint. To improve the accuracy of future assessments, we recommend opening a dialogue with your outsourced data centre provides in order to request evidence of their calculations. This would enable Carbon Footprint Ltd to ensure that the calculations are correct and fair.

Zen could also provide actual water meter readings rather than estimated readings for the first and last reading of the data period as a minimum; ideally on (or as close to as possible) the 1st October and 30th September. Although it should be noted that this makes up a small proportion of the error margin and the key focus for improvement should be outsourced energy use.

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. This could include surveying employees to evaluate how effective operations were with reduced flying, to determine a travel policy going forwards.
- In line with Zen's plans to investigate energy efficiency opportunities within its Sandbrook Park site, Zen could consider carrying out an energy audit to help identify areas with the greatest opportunities for savings. This is particularly important for natural gas consumption as this is a non-renewable source of energy. Although Green Brook offset their customers gas supply, the overall aim should be to reduce consumption where possible. Carbon Footprint are able to assist with this if required. For further information about our energy auditing services, please contact your account manager.
- 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 the feasibility of providing an electric pool car for staff to use instead of personal vehicles (the average trip distance and real-world driving ranges will need to be taken into account).

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 16: 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

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:

- 20% of the cost of a van, up to a maximum of £8,000
- 35% of the cost of a car, up to a maximum of £3,000

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.

Following the assessment of the baseline year (2018/19), Zen offset its total calculated emissions for the 2018/19. In addition to this, Zen retrospectively estimated its historical emissions using the intensity metric (tCO_2e per £M turnover) to offset emissions associated with the company since its establishment in 1995.

With this in mind, I recommend that Zen consider offsetting its 2019/20 footprint to maintain its carbon neutrality. As well as balancing out GHG emissions which have already been caused by financially supporting projects providing solutions to climate change, this also fits well with Zen's sustainable ethos and drive to change for a better future. Zen's carbon neutral status will also complement its existing CSR programmes, including the B Corp Certification it achieved for the first time in 2020.

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

5.4. Carbon Footprint Standard

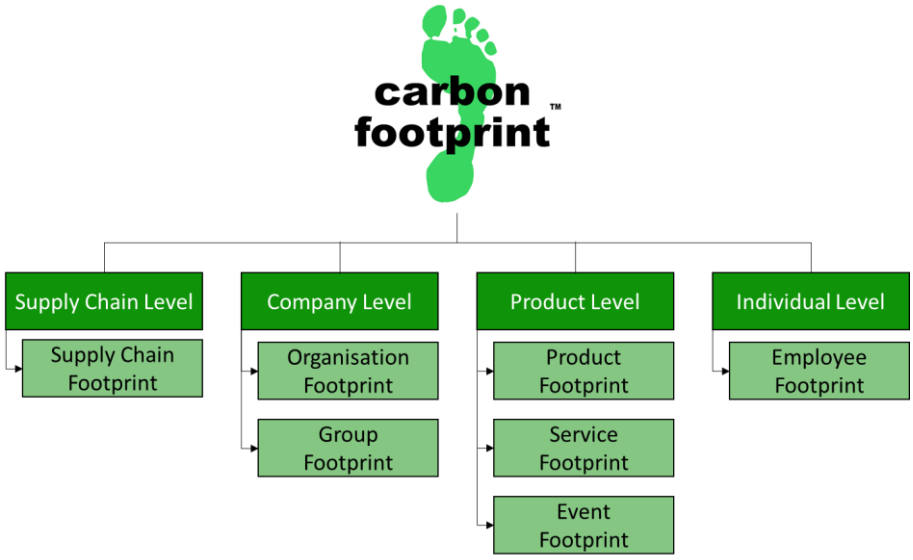
5.4.1. Brand endorsement

Zen Internet, in conjunction with Carbon Footprint Ltd, has assessed its carbon footprint and shown a reduction of 85.84% based on its absolute (gross market-based) emissions. By achieving this Zen Internet 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.

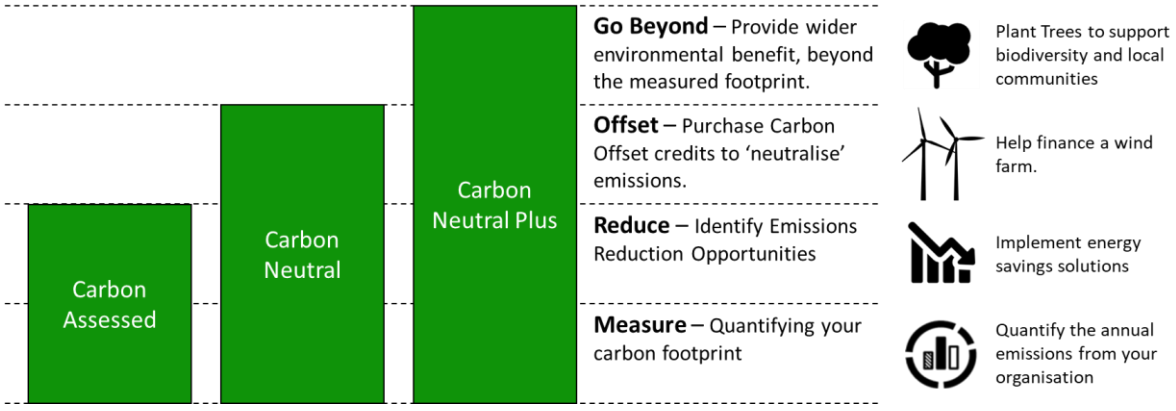
5.4.2. Scope

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.



Once the scope has been identified, the Carbon Footprint Standard will allow Zen Internet 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. TalkTalk Telecom Group PLC Annual Report (2020) www.talktalkgroup.com/article/talktalkgroup/2020/AR2020

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 Zen Internet'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 Zen Internet 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 Zen Internet. It should be noted that the latter has been calculated by Carbon Footprint Ltd, and not provided by Zen Internet.

B.1 Data used for Scope 1 emissions assessment

This section contains the data related to the direct emissions attributable to Zen Internet. These include the energy usage in Zen Internet'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 17: Data supplied and emissions breakdown for energy usage

Site Name	No. of staff	Natural Gas (kWh)	Gas Oil (litre)	Country	Natural Gas (tCO_2e)	Gas Oil (tCO_2e)
Sandbrook Park	538	1,722,840	2,500	United Kingdom	316.78	6.89
Moss Bridge Road		41,164		United Kingdom	7.57	0.00
Total	**538**	**1,764,004**	**2,500**		**324.35**	**6.89**

Table 18: Data supplied and emissions breakdown for company owned car transportation

Registration Plate	Make	Model	Engine Size (cc)	Fuel Type	Emissions Rating (gCO_2/km)	Annual Distance (miles)	Emissions (tCO_2e)
YB68 XLW	Nissan	Qashqai	1461	Diesel (retail)	110	1,241	0.27
SF63 XLR	Toyota	Hi-Lux	2494	Diesel (retail)	193	2,545	0.97
CX66GWW	BMW	3 Series Saloon Petrol 330e 2.0 Phev M Sport Auto	1998	Petrol Hybrid	49	1,386	0.13
N777TSH	Mercedes	350e Saloon	1991	Petrol Hybrid	52	1,338	0.14
AO18ZYE/D7VEB	Volkswagen	Passat Est 1.4TSi GTE Advance DSG	1395	Petrol Hybrid	40	149	0.01
BG67AOZ	Volkswagen	Golf 5 DR 1.4TSi GTE ADVANCE DSG	1395	Petrol Hybrid	40	861	0.07

Registration Plate	Make	Model	Engine Size (cc)	Fuel Type	Emissions Rating (gCO_2/km)	Annual Distance (miles)	Emissions (tCO_2e)
MV17URB	Mercedes	CLA Class CLA200 Coupe 4Dr	2143	Diesel (retail)	109	2,971	0.64
CP66ATF	BMW	5 Series Touring 520d [190] M Sport 5dr Step Auto	1995	Diesel (retail)	108	1,439	0.31
PE17VUP	BMW	Mini Clubman Estate	1499	Petrol (retail)	111	5,555	1.22
CY66FBL	BMW	3 series saloon petrol 330e 2.0 PHEV M Sport Auto	1998	Petrol Hybrid	49	2,282	0.22
Total						**19,767**	**3.98**

Table 19: Data supplied and emissions breakdown for refrigerant gas replenishment

Amount Refilled (kg)	Refrigerant type	GWP ($kgCO_2e$)	Emissions (tCO_2e)
13	HFC-134a	1,430	18.59
9.2	R410A	2,088	19.21
22.20			**37.80**

B.2 Data used for Scope 2 emissions assessment

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

Table 20: Data supplied and emissions breakdown for purchased electricity usage

Site Name	No. of Zen staff	Grid Electricity (kWh)	Renewable Resource	Country	Location-based Electricity Generation (tCO_2e)	Market-based Electricity Generation (tCO_2e)
Sandbrook Park	538	5,989,436	Yes	United Kingdom	1,396.38	0.00
Moss Bridge Road	0	55,059	Yes	United Kingdom	12.84	0.00
Total	**538**	**6,044,495**			**1,409.22**	**0.00**

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 21: Data supplied and emissions breakdown for transmission and distribution of purchased electricity

Site Name	No. of Zen staff	Grid Electricity (kWh)	Renewable Resource	Country	Location-based Electricity Transmission & Distribution (tCO_2e)	Market-based Electricity Transmission & Distribution (tCO_2e)
Sandbrook Park	538	5,989,436	Yes	United Kingdom	120.09	0.00
Moss Bridge Road	0	55,059	Yes	United Kingdom	1.10	0.00
Total	**538**	**6,044,495**			**121.19**	**0.00**

Table 22: Data supplied and emissions breakdown for generation of outsourced electricity

Site Name	Grid Electricity (kWh)	Renewable Resource	Country	Location-based Electricity (tCO_2e)		Market-based Electricity (tCO_2e)	
				Generation	Transmission & Distribution	Generation	Transmission & Distribution
Telehouse (outsourced)	490,560	Yes	United Kingdom	114.37	9.84	0.00	0.00
Interxion (outsourced)	169,944	Yes	United Kingdom	39.62	3.41	0.00	0.00
AQL (outsourced)	6,132	Yes	United Kingdom	1.43	0.12	0.00	0.00
Equinix (outsourced)	110,376	Yes	United Kingdom	25.73	2.21	0.00	0.00
Virtus (outsourced)	293,460	Yes	United Kingdom	68.42	5.88	0.00	0.00
450 BT Exchanges (outsourced)	6,701,400	Yes	United Kingdom	1,562.36	134.36	0.00	0.00
Total	**7,771,872**			**1,811.93**	**155.83**	**0.00**	**0.00**

Table 23: Data supplied and emissions breakdown for staff business travel by employee-owned car

Registration Plate	Make	Model	Annual Distance (miles)	Car Type	Emissions (tCO_2e)
MK68 OWA	Peugeot	108	525	Average Unknown Fuel	0.14
FH14 GKZ	Toyota	Auris	187	Average Unknown Fuel	0.05
		No details on ANPR system	104	Average Unknown Fuel	0.03
A281 GES	BMW	3 Series	615	Average Unknown Fuel	0.17
SJ15 PNV	Mazda	3	78	Average Unknown Fuel	0.02
MV10 BKX	BMW	5 Series	4,341	Average Unknown Fuel	1.20
PO65 JWE	Vauxhall	Zafira	38	Average Unknown Fuel	0.01
YK14 ZPC	Ford	Kuga	168	Average Unknown Fuel	0.05
ND64 YXN	Nissan	Qashqai	104	Average Unknown Fuel	0.03
AM66 PBM	Mercedes	C Class	2,686	Average Unknown Fuel	0.74
DE68 KTV	Toyota	Prius	390	Average Unknown Fuel	0.11
PG66 VKM	Audi	A1	72	Average Unknown Fuel	0.02
M77 KWB	Mercedes	E Class	140	Average Unknown Fuel	0.04
BJ55 YUV	Mercedes	C Class	6,246	Average Unknown Fuel	1.72
WG64 FGM	Nissan	Leaf	58	Average Unknown Fuel	0.02
A7 NBX	BMW	1 Series	186	Average Unknown Fuel	0.05
WV65 TVK	Fiat	500X	68	Average Unknown Fuel	0.02
YP16 FBF	Jeep	Renegade	6,933	Average Unknown Fuel	1.91
ML66 YHW	Mercedes	C Class	1,330	Average Unknown Fuel	0.37
DL65 ACJ	Nissan	Qashqai	52	Average Unknown Fuel	0.01
		No details on ANPR system	173	Average Unknown Fuel	0.05
NA12 UVE	Volvo	V50	64	Average Unknown Fuel	0.02
CX67 MKO	BMW	3 Series	471	Average Unknown Fuel	0.13
SD18 ZKA	Skoda	Superb	371	Average Unknown Fuel	0.10
MF14 YSU	Toyota	Yaris	68	Average Unknown Fuel	0.02
MJ12 OBT	BMW	3 Series	790	Average Unknown Fuel	0.22

Registration Plate	Make	Model	Annual Distance (miles)	Car Type	Emissions (tCO_2e)
PK15 XFF	Volkswagen	Golf	2,140	Average Unknown Fuel	0.59
KF04 ELF	Mazda	MX5	383	Average Unknown Fuel	0.11
WF57 UYC	Renault	Megane	7,031	Average Unknown Fuel	1.94
		No details on ANPR system	1,131	Average Unknown Fuel	0.31
HG60 NLV	Renault	Scenic	598	Average Unknown Fuel	0.16
K99 AWG	Alfa Romeo	Giulietta	1,510	Average Unknown Fuel	0.42
YB15 TXG	Mazda	CX 5	767	Average Unknown Fuel	0.21
MW66 BOV	Volkswagen	CC	78	Average Unknown Fuel	0.02
YT16 MBY	Kia	Sportage GT	70	Average Unknown Fuel	0.02
KD57 EKR	Vauxhall	Astra	96	Average Unknown Fuel	0.03
RJ12 VSF	BMW	5 Series	4,977	Average Unknown Fuel	1.37
N3 RDU	Lexus	IS 250?	1,156	Average Unknown Fuel	0.32
MX65 VPK	Mercedes	C Class PHEV	897	Average Unknown Fuel	0.25
AO66 LLP	Ford	Fiesta	98	Average Unknown Fuel	0.03
DC17 DHU	Audi	Q5	4,768	Average Unknown Fuel	1.32
KT65 WNF	Mercedes	A Class	813	Average Unknown Fuel	0.22
MW13 JXM	Honda	Civic	434	Average Unknown Fuel	0.12
		No details on ANPR system	6,494	Average Unknown Fuel	1.79
FH19 WCL	Land Rover	Range Rover	96	Average Unknown Fuel	0.03
YR17 WEP	Volkswagen	Polo	146	Average Unknown Fuel	0.04
DK68 RZG	Mercedes	C220	136	Average Unknown Fuel	0.04
F9 SPJ	Porsche	Cayenne	398	Average Unknown Fuel	0.11
ND64 NFU	Mazda	6 Estate	516	Average Unknown Fuel	0.14
MH18 FTV	Volkswagen	Golf GTI	296	Average Unknown Fuel	0.08
MK18 JWA	Infiniti	Q50	33	Average Unknown Fuel	0.01
		No details on ANPR system	1,375	Average Unknown Fuel	0.38
EX62 XFC	Mercedes	CLS 350	532	Average Unknown Fuel	0.15

Registration Plate	Make	Model	Annual Distance (miles)	Car Type	Emissions (tCO_2e)
M444 LTM	Land Rover	Discovery Sport	458	Average Unknown Fuel	0.13
DM10 DOM	Vauxhall	Corsa	654	Average Unknown Fuel	0.18
LO65 ZNC	Mercedes	GLC	3,860	Average Unknown Fuel	1.06
NJ68 ZTG	BMW	1 Series	277	Average Unknown Fuel	0.08
BW19 OVR	Volvo	XC60	1,486	Average Unknown Fuel	0.41
LO19 XGR	Mercedes	A Class	2,869	Average Unknown Fuel	0.79
MC65 WKE	Skoda	Octavia	36	Average Unknown Fuel	0.01
ML67 BXC	Mini	Cooper S	1,088	Average Unknown Fuel	0.30
MV66 RNO	Toyota	Rav 4 Hybrid	804	Average Unknown Fuel	0.22
YG64 OHJ	Mazda	6 Sport	2,765	Average Unknown Fuel	0.76
		No details on ANPR system	3,600	Average Unknown Fuel	0.99
MJ65 DSZ	Skoda	Yeti	476	Average Unknown Fuel	0.13
AO04 PRZ	Volvo	V40	256	Average Unknown Fuel	0.07
NU65 GGF	BMW	5 Series	364	Average Unknown Fuel	0.10
T9 CEJ	Mercdes	C Class	114	Average Unknown Fuel	0.03
YS65 AKJ	Mazda	6	879	Average Unknown Fuel	0.24
DG69 YWP	Volvo	V90 Estate	5,136	Average Unknown Fuel	1.42
KP11 HVC	Ford	Fiesta	90	Average Unknown Fuel	0.02
MT18 ZRJ	Ford	Fiesta	72	Average Unknown Fuel	0.02
MM13 YBD	Mini	One	236	Average Unknown Fuel	0.07
EN64 FVA	Seat	Mii	150	Average Unknown Fuel	0.04
OE55 XSP	Honda	Jazz	96	Average Unknown Fuel	0.03
KT15 YFL	Seat	Leon	222	Average Unknown Fuel	0.06
HV68 RCY	BMW	530e	1,588	Average Unknown Fuel	0.44
		No details on ANPR system	2,223	Average Unknown Fuel	0.61
		No details on ANPR system	492	Average Unknown Fuel	0.14
HV68 KWF	BMW	530e	2,074	Average Unknown Fuel	0.57

Registration Plate	Make	Model	Annual Distance (miles)	Car Type	Emissions (tCO_2e)
R700 SHW	Mini	John Cooper Works	58	Average Unknown Fuel	0.02
GC16 LND	Volkswagen	Passat	850	Average Unknown Fuel	0.23
C20 CBS	Toyota	Corolla	28	Average Unknown Fuel	0.01
MC16 PJO	BMW	5 Series	768	Average Unknown Fuel	0.21
BK66 XDW	Kia	Sportage	226	Average Unknown Fuel	0.06
NJ64 WFH	BMW	X3	583	Average Unknown Fuel	0.16
K500 STO	Fiat	500	5,020	Average Unknown Fuel	1.38
YB63 CLO	Skoda	Octavia VRS	720	Average Unknown Fuel	0.20
		No details on ANPR system	74	Average Unknown Fuel	0.02
DE68ZGG			1,378	Average Unknown Fuel	0.38
EA61 OKZ	Mercedes	E Class	15,465	Average Unknown Fuel	4.27
YD19 SJF	BMW	5 Series Estate	891	Average Unknown Fuel	0.25
LH51 AAZ	Mercedes	CLK	297	Average Unknown Fuel	0.08
FR13 OUA	Toyota	Auris Hybrid	5,443	Average Unknown Fuel	1.50
YY14 HLC	Nissan	Qashqai	197	Average Unknown Fuel	0.05
		No details on ANPR system	53	Average Unknown Fuel	0.01
KY04 LKG	Mercedes	C Class	9,593	Average Unknown Fuel	2.65
KP08 OLJ	Volkswagen	Touran	238	Average Unknown Fuel	0.07
UFZ 456	BMW	640D	1,290	Average Unknown Fuel	0.36
KM68 MVG	Mercedes	A Class	4,010	Average Unknown Fuel	1.11
FX67 VRL	Jaguar	F Pace	302	Average Unknown Fuel	0.08
P50 DRH	Audi	A6	118	Average Unknown Fuel	0.03
		No details on ANPR system	68	Average Unknown Fuel	0.02
KM67 XMB			1,071	Average Unknown Fuel	0.30
Total			**144,333**		**39.81**

Table 24: Data supplied and emissions breakdown for staff business travel by hire car

Registration Plate	Make	Engine Size (cc)	Fuel Type	Emissions Rating (gCO_2/km)	Annual Distance (mile)	Car Type	Emissions (tCO_2e)
ME19 CVZ	Vauxhall	Unknown	Diesel (retail)		159	Average Diesel	0.04
MC19 FPD	Ford	1995	Diesel (retail)	182	147	Medium Diesel (1.7l-2.0l)	0.05
CN19 UTC	Ford	1995	Diesel (retail)	175	14	Medium Diesel (1.7l-2.0l)	0.00
ND19 NTL	Nissan	1461	Diesel (retail)	110	215	Small Diesel (<1.7l)	0.05
GJ68 DVZ	Skoda	1498	Petrol (retail)	114	84	Medium Petrol (1.4l-2.0l)	0.02
CP18 SZK	Ford	1995	Diesel (retail)	193	145	Medium Diesel (1.7l-2.0l)	0.06
DS18 LXF	Nissan	1461	Diesel (retail)	99	143	Small Diesel (<1.7l)	0.03
KR18 ZYX	Mercedes	1991	Petrol (retail)	126	66	Medium Petrol (1.4l-2.0l)	0.02
DL69 FWS	Nissan	1332	Petrol (retail)	131	241	Small Petrol (<1.4l)	0.06
WV69 ABF	Ford	1498	Petrol (retail)	164	1,229	Medium Petrol (1.4l-2.0l)	0.40
DS68 CFG	Vauxhall	1499	Diesel (retail)	108	133	Small Diesel (<1.7l)	0.03
MK68 AOG	Vauxhall	1364	Petrol (retail)	150	22	Small Petrol (<1.4l)	0.01
YM69 CSO	Ford	1997	Diesel (retail)	152	190	Medium Diesel (1.7l-2.0l)	0.06
WO19 AXZ	Jeep	1386	Petrol (retail)	155	163	Small Petrol (<1.4l)	0.05
DT69 JZG	Nissan	1332	Petrol (retail)	130	683	Small Petrol (<1.4l)	0.18
DS69 UHC	Vauxhall	1499	Diesel (retail)	135	14	Small Diesel (<1.7l)	0.00
DN69 CFZ	Vauxhall	1199	Petrol (retail)	114	30	Small Petrol (<1.4l)	0.01
FL68 OXU	Vauxhall	1598	Diesel (retail)	174	86	Small Diesel (<1.7l)	0.03
KL19 XWW	Mercedes	2143	Diesel (retail)	210	98	Large Diesel (>2.0l)	0.04
ET18 KXP	Hyundai	1685	Diesel (retail)	119	9,931	Small Diesel (<1.7l)	2.34
					13,793		**3.46**

Table 25: Data supplied and emissions breakdown for staff business travel by train

Train Type	No. of Passenger Trips	Origin	Destination	Return Trip?	Distance (km)	Passenger km	Emissions (tCO_2e)
National rail	1	Birmingham New Street	Manchester Piccadilly	Yes	142.1	284.24	0.01
National rail	2	Blackburn	Manchester Victoria	Yes	69.4	277.52	0.01
National rail	1	Broad Green	Manchester Piccadilly	Yes	49.6	99.10	0.00
National rail	1	Burnley Manchester Road	Manchester Victoria	Yes	43.1	86.12	0.00
National rail	1	Burnley Manchester Road	Leeds	Yes	94.5	188.90	0.01
National rail	2	Castle Cary	Norwich	Yes	375.7	1,502.96	0.06
National rail	1	Castle Cary	London Paddington	Yes	204.2	408.34	0.02
National rail	1	Castleton	Leeds	Yes	82.5	165.02	0.01
National rail	3	Chester	Leeds	Yes	140.7	844.02	0.03
National rail	1	Chester	Sheffield	Yes	114.1	228.16	0.01
National rail	1	Diss	London Liverpool Street	Yes	151.0	301.96	0.01
National rail	1	Doncaster	London Kings Cross	Yes	273.5	546.92	0.02
National rail	1	Doncaster	Potters Bar	Yes	240.8	481.58	0.02
National rail	1	Greenfield	London Euston	Yes	318.6	637.20	0.02
National rail	1	Handforth	London Euston	Yes	311.1	622.26	0.02
National rail	2	Harrogate	London Kings Cross	Yes	337.5	1,349.92	0.05
National rail	1	Haydons Road	City Thameslink	Yes	23.0	45.94	0.00
National rail	1	Haydons Road	London Waterloo	Yes	12.7	25.32	0.00
National rail	1	Highbridge & Burnham	Rochdale	Yes	355.1	710.20	0.03
National rail	1	Highbridge & Burnham	Manchester Piccadilly	Yes	309.6	619.20	0.02
National rail	3	Huddersfield	Leeds	Yes	32.7	196.44	0.01
National rail	4	Leeds	London Kings Cross	Yes	313.1	2,504.72	0.09
National rail	1	Leeds	Manchester Piccadilly	Yes	69.8	139.56	0.01

Train Type	No. of Passenger Trips	Origin	Destination	Return Trip?	Distance (km)	Passenger km	Emissions (tCO_2e)
National rail	1	Littleborough	Manchester Victoria	Yes	27.8	55.64	0.00
National rail	1	Liverpool	London Euston	Yes	309.8	619.60	0.02
National rail	1	Liverpool	Milton Keynes Central	Yes	232.1	464.22	0.02
National rail	2	London Euston	Manchester Piccadilly	Yes	319.3	1,277.16	0.05
National rail	1	Malton	Manchester Piccadilly	Yes	143.2	286.38	0.01
National rail	3	Manchester Airport	Rochdale	Yes	37.0	221.94	0.01
National rail	2	Manchester Airport	London Kings Cross	Yes	299.7	1,198.96	0.04
National rail	3	Manchester Piccadilly	Hereford	Yes	181.0	1,085.94	0.04
National rail	1	Manchester Piccadilly	Kensington Olympia	Yes	329.8	659.64	0.02
National rail	2	Manchester Piccadilly	Leeds	Yes	68.3	273.08	0.01
National rail	12	Manchester Piccadilly	London Euston	Yes	319.2	7,660.08	0.28
National rail	1	Manchester Piccadilly	Milton Keynes Central	Yes	246.5	493.06	0.02
National rail	1	Manchester Piccadilly	Newcastle	Yes	230.7	461.42	0.02
National rail	1	Manchester Piccadilly	Wolverhampton	Yes	122.2	244.46	0.01
National rail	1	Manchester Piccadilly	York	Yes	111.8	223.62	0.01
National rail	13	Manchester Victoria	Leeds	Yes	69.7	1,811.94	0.07
National rail	1	Manchester Victoria	York	Yes	113.2	226.46	0.01
National rail	1	Mirfield	London Kings Cross	Yes	302.6	605.28	0.02
National rail	1	Preston	Harrow & Wealdstone	Yes	332.3	664.62	0.02
National rail	3	Preston	London Euston	Yes	332.3	1,993.80	0.07
National rail	1	Preston	Watford Junction	Yes	308.3	616.68	0.02
National rail	2	Rochdale	Leeds	Yes	52.9	211.72	0.01
National rail	1	Rochdale	Edinburgh	Yes	355.4	710.74	0.03
National rail	1	Rochdale	London Euston	Yes	353.6	707.22	0.03
National rail	1	Scunthorpe	Leeds	Yes	85.9	171.76	0.01

Train Type	No. of Passenger Trips	Origin	Destination	Return Trip?	Distance (km)	Passenger km	Emissions (tCO_2e)
National rail	1	Sheffield	West Kirby	Yes	145.7	291.36	0.01
National rail	1	Stockport	London Euston	Yes	317.7	635.32	0.02
National rail	1	Templecombe	Woking	Yes	156.0	311.92	0.01
National rail	1	Warrington Bank Quay	York	Yes	138.0	275.96	0.01
National rail	1	Warrington Bank Quay	Manchester Victoria	Yes	32.3	64.54	0.00
National rail	1	Warrington Bank Quay	London Euston	Yes	306.6	613.28	0.02
National rail	1	West Kirby	Sheffield	Yes	144.3	288.60	0.01
National rail	1	West Kirby	Manchester Victoria	Yes	89.3	178.58	0.01
National rail	1	West Kirby	London Euston	Yes	356.3	712.56	0.03
National rail	2	Wigan North Western	London Euston	Yes	324.5	1,298.08	0.05
National rail	1	Wigan North Western	Glasgow Central	Yes	324.0	647.96	0.02
National rail	1	York	Birmingham International	Yes	234.9	469.74	0.02
National rail	12	York	Leeds	Yes	40.2	963.84	0.04
National rail	4	York	London Bridge	Yes	299.5	2,395.92	0.09
National rail	3	York	London Kings Cross	Yes	335.1	2,010.36	0.07
National rail	3	York	Manchester Victoria	Yes	113.3	679.98	0.03
National rail	1	York	Rochdale	Yes	96.4	192.74	0.01
Total	**127**				**12,802.7**	**47241.76**	**1.75**

Table 26: Data supplied and emissions breakdown for staff business flights

No. of passenger trips	Type	Leg 1	Leg 2	Return Trip?	Leg 1 Airport Name	Leg 2 Airport Name	Leg 1 Country	Leg 2 Country	Total Distance (km)	Passenger km	Total Emissions (tCO_2e)
2	Economy	MAN	INV	Yes	Manchester	Inverness	UK	UK	479	1,916	0.47
2	Economy	MAN	CPH	Yes	Manchester	Copenhagen	UK	Denmark	995	3,978	0.61
4									**1,474**	**5,894**	**1.08**

Table 27: Data supplied and emissions breakdown for staff business travel by taxi

Type of Taxi	No of Journeys	Departure	Destination	Distance	Passenger Distance (km)	Emissions (tCO_2e)
Regular Taxi	149	Zen Internet Sandbrook Park OL11 1RY	Rochdale Interchange Bus Station OL16 1XU	2.20	528	0.0768
Regular Taxi	447	Zen Internet Sandbrook Park OL11 1RY	Rochdale Train Station OL11 1DS	1.90	1367	0.1989
Total	**596**			**4.10**	**1894**	**0.28**

Table 28: Data supplied and emissions breakdown for home-workers

Period	Home-worker type	No. of home-workers of this type	No. of hours per day	No. of days per week	No. of weeks per year	Country	Electricity Generation (tCO_2e)	Electricity Transmission & Distribution (tCO_2e)	Natural Gas (tCO_2e)	Total Emissions (tCO_2e)
Oct 2019 to March 2020	Only the home-worker	21	7.5	5	48	United Kingdom	0.99	0.09	14.77	15.84
April 2020 to September 2020	Others in the house	449	7.5	5	48	United Kingdom	21.15	1.82	0.00	22.97
	Others in the house	8	7.5	4	48	United Kingdom	0.30	0.03	0.00	0.33
	Others in the house	7	7.5	3	48	United Kingdom	0.20	0.02	0.00	0.21

Period	Home-worker type	No. of home-workers of this type	No. of hours per day	No. of days per week	No. of weeks per year	Country	Electricity Generation (tCO_2e)	Electricity Transmission & Distribution (tCO_2e)	Natural Gas (tCO_2e)	Total Emissions (tCO_2e)
	Others in the house	1	7.5	2	48	United Kingdom	0.02	0.00	0.00	0.02
	Only the home-worker	53	7.5	5	48	United Kingdom	2.50	0.21	37.27	39.98
Total		**539**					**25.16**	**2.16**	**52.04**	**79.36**

Table 29: Data supplied and emissions breakdown for water consumption and waste water

Site	Water supply (m^3)	Water Supply (tCO_2e)	Estimated wastewater %	Wastewater treatment (tCO_2e)	Total emissions from water consumption (tCO_2e)
Sandbrook Park (M1)	2,082	0.72	100%	1.47	2.19
Sandbrook Park (M2)	12,993	4.47	100%	9.20	13.67
Moss Bridge Road	147	0.05	100%	0.10	0.15
Totals	**15,222**	**5.24**		**10.78**	**16.01**

Table 30: Data supplied and emissions breakdown for waste production on site

Type of Waste	Waste Produced (tonnes)	Total Emissions (tCO_2e)
Recyclable	22.35	0.476
Residual	9.66	0.206
Hazardous (WEEE)	0.12	0.003
Green	4.30	0.044
Total	**36.42**	**0.729**

Table 31: Data supplied and emissions breakdown for paper consumption on site

Paper Type	Weight per ream (kg)	Number of reams	Total Emissions (tCO_2e)
Virgin Pulp – A4	2.36	220	0.48

B.4 Scope 1 emissions breakdowns

The table below demonstrates the company's Scope 1 CO_2e emissions in their respective greenhouse gases.

Table 32: CO_2e Emissions breakdown for Scope 1 emissions into their greenhouse gases.

Activity	kg CO_2e	kg CO_2 in CO_2e	kg CH_4 in CO_2e	kg N_2O in CO_2e
Site gas	324347.35	323748.32	426.19	173.24
Site gas oil	6894.40	7.30	77.78	0.00
Refrigerants	37799.60			
Company car travel	3981.99	3372.59	4.03	32.35
Total	**373023.35**	**327128.22**	**508.00**	**205.59**