LOVE
DESIGN
STUDIO

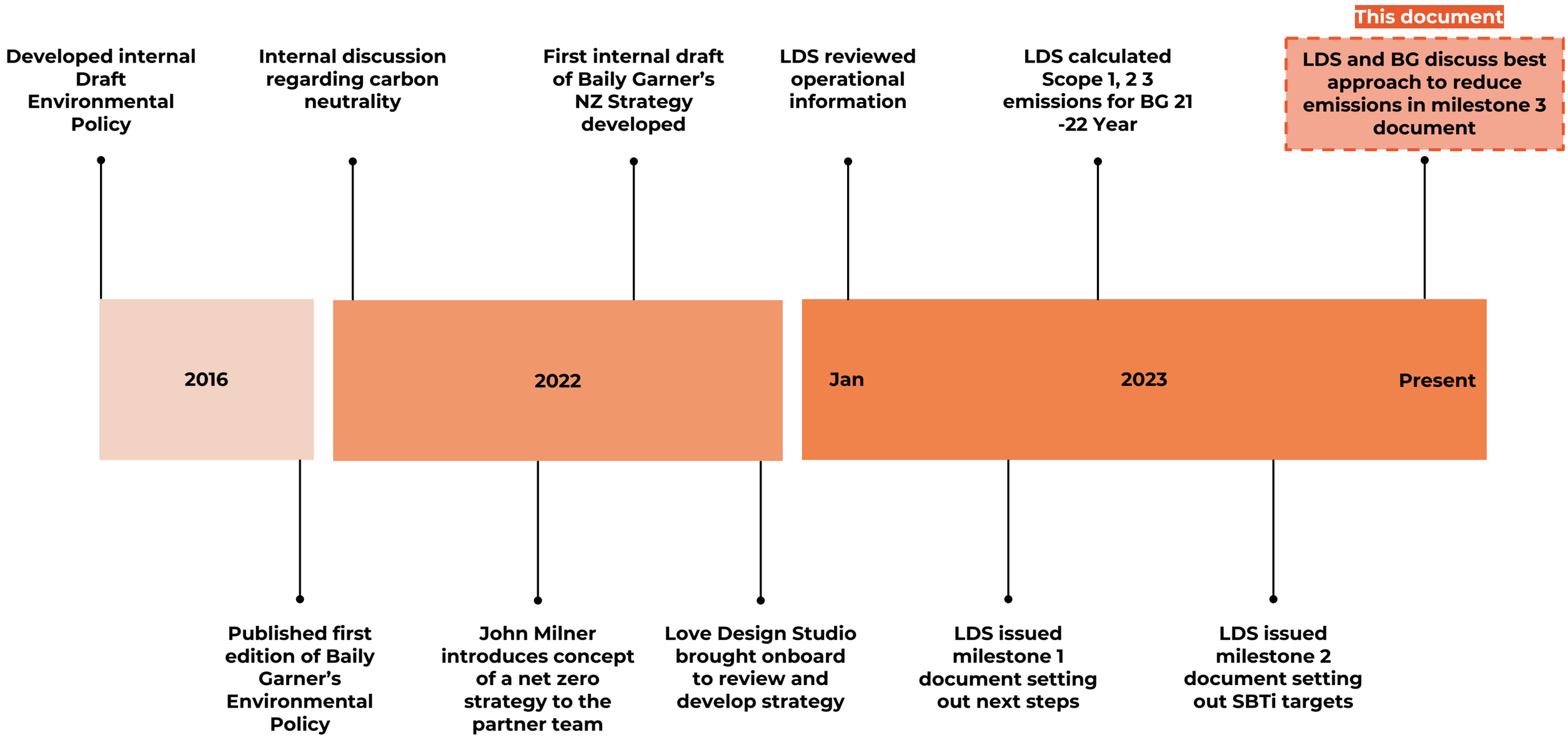
February 2023

BG NZC Roadmap

Milestone 3
Carbon Reduction Actions

Contents

Baily Garner Carbon Reduction Progress



Emission Summary

Baily Garner aspire to be Net Zero by 2030 and have opted to utilise the robust principles and target setting methods established by the Science Based Target initiative (SBTi)..

This document is the third part of a trilogy of reports; ‘Milestone 3’, produced by Love Design Studio. The Milestone 1 document established the GHG boundaries and methodology for calculating Baily Garner’s Scope 1, 2 and 3 emissions. The second Milestone document summarised Baily Garner’s GHG Scope emissions. This third Milestone encapsulates the findings from Milestone 2 and provides a strategy that would enable Baily Garner to achieve their Net Zero carbon targets and goals. The strategies included in this document are recommendations only and by no means intransigent.

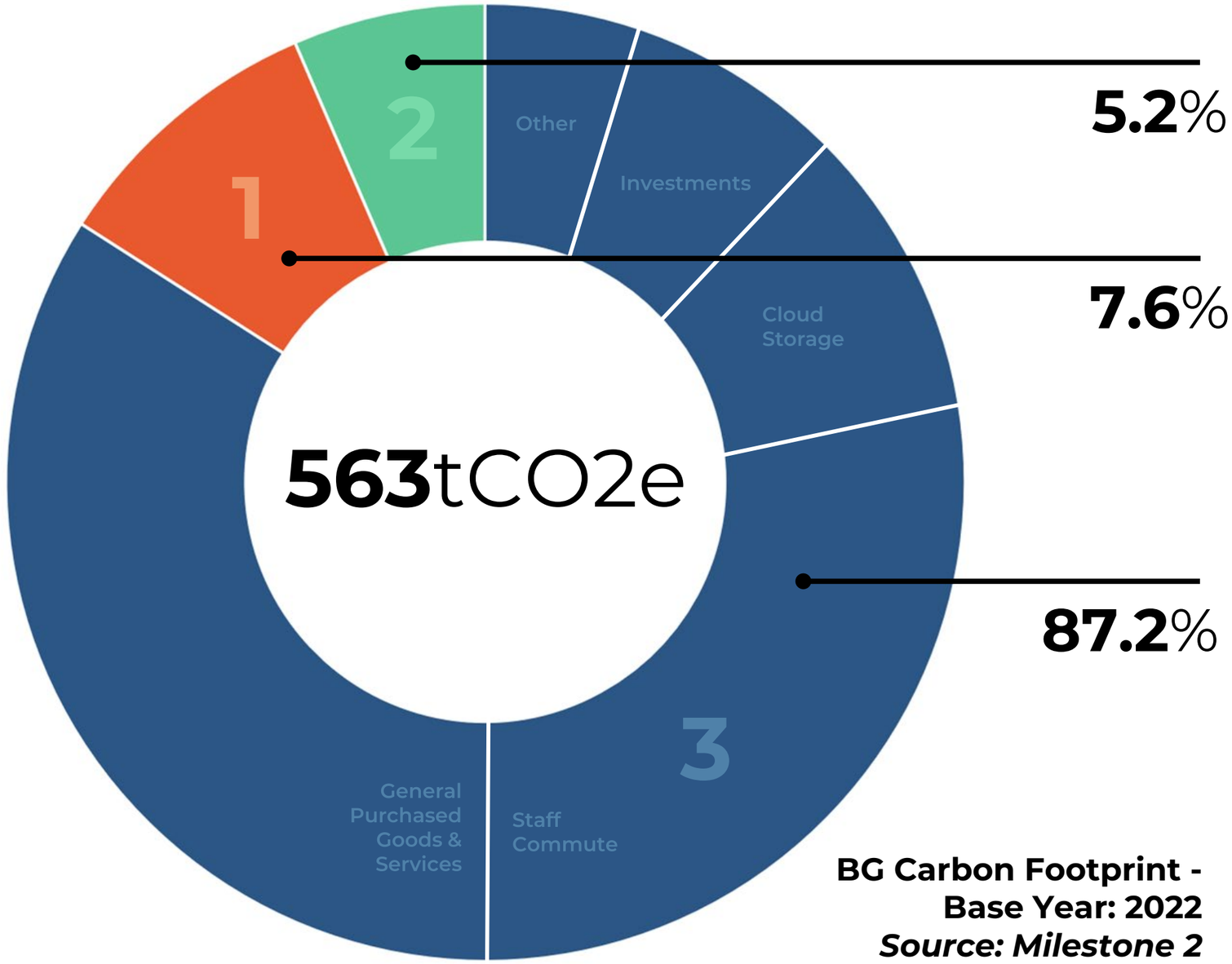
A summary of Baily Garner’s GHG emissions is illustrated in Figure 1 to the right. To achieve net zero in accordance with the SBTI, Baily Garner must reduce their:

- Scope 1 emissions by 90% (31.8tCO2e) by 2030
- Scope 2 emissions by 90% (21.8tCO2e) by 2030
- Scope 3 emissions by 25% (164tCO2e) by 2030

Love Design Studio will continue to work with Baily Garner to explore and realise opportunities and pathways to achieve these targets.

The starting point of Baily Garner’s journey to net zero has been set using 2021-2022 as the reporting base year, as a result of the information provided to LDS.

The following page denotes a high level summary of the opportunities currently available to help Baily Garner achieve their ambitions of becoming a net zero organisation.



BG Carbon Footprint - Base Year: 2022
Source: Milestone 2 Document

CO2 Reduction Summary

Scope 1: Reduction Opportunities

Scope 1 emissions can be reduced through two key strategies. The first of which relies on BG investigating further retrofit measures to their office buildings and the second relies on BG phasing out fossil-fuel company cars and making the switch to an electric fleet over time and a focus on sustainable public transport.

Scope 1 presents an opportunity to reduce emissions to **net zero by 2030** through the implementation of an office retrofit strategy and phasing out of fossil fuel vehicles.

Scope 2: Reduction Opportunities

Following swapping over from fossil fuel building services and vehicles, BG should investigate the feasibility of renewable energy tariffs to find a tariff that is both financially viable, and provides BG with an energy mix that aligns with the CO2 reduction goals. There is an opportunity to carry out a more intensive audit of the building emissions associated with the three office spaces including CIBSE TM54 analysis.

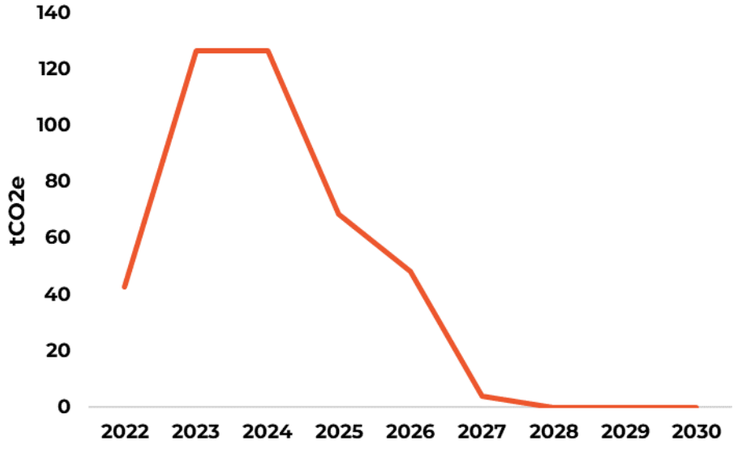
Based on the proposed scenario of switching all offices to electric systems, and using electric vehicles it is anticipated that initially BG's scope 2 emissions will increase as a result of the increased electricity usage, before decreasing viia the use of on-site renewables and a renewable energy tariff to a settled figure of approximately **20 tCO2e** per annum. Further reduction measures could be investigated to reduce this scope.

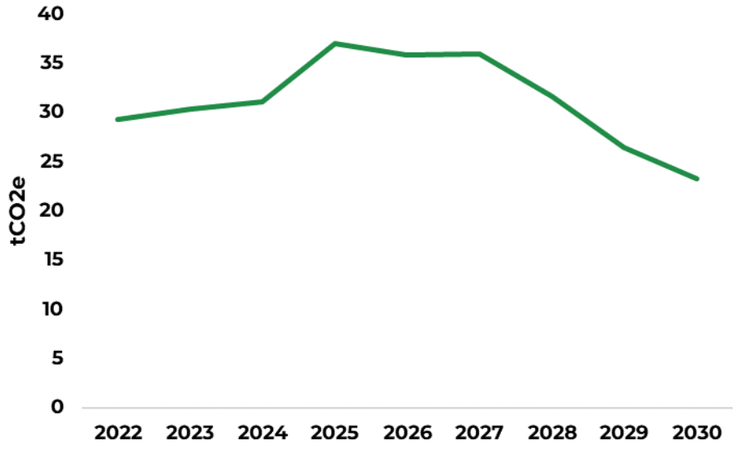
Scope 3: Reduction Opportunities

Scope 3 Emissions are typically harder to monitor and reduce. BG should investigate the supply chains of their Purchased Goods and Services to seek lower carbon alternatives and work with companies that are also on the road to net zero carbon. Another key focus area should be the introduction of travel plans and updated office facilities to encourage staff to use more public transport and active travel to commute to work, spending time on maximising the opportunities for hybrid working.

More immediate ways to curb scope 3 emissions include switching to green investments and less carbon-intensive cloud service plans

Scope 3 presents an opportunity to reduce emissions to **60 tCO2e by 2040**, as a conservative estimate.





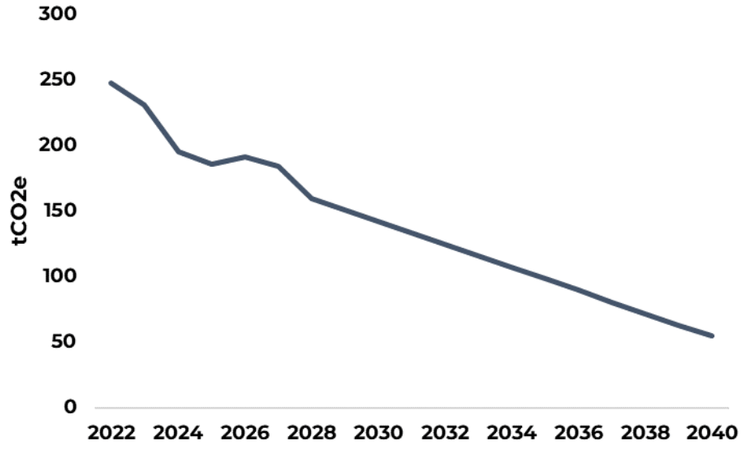


Figure 15:. Emissions summary graphs for reductions strategy applied to scope 1 (left), scope 2 (middle) and scope 3 (right).

Section One

1 Introduction

Introduction

Baily Garner LLP is a team of 180 people, combining architects, building surveyors, electrical, mechanical and sustainability consultants project managers and health and safety specialists. Baily Garner's mission statement is to positively impact on people's lives. Part of Baily Garner's environmental policy includes reducing their impact on the environment, reducing impacts of travel and raising environmental awareness amongst staff.

Love Design Studio have calculated the Greenhouse Gas (GHG) emissions emanating from the operation of Baily Garner, using the 2021-2022 period as the base year.

The UN Framework Convention on Climate Change (UNFCCC) sets out the basic legal framework for stabilising atmospheric concentrations of greenhouse gases (GHGs). The Glasgow Climate Pact, recognised the need for accelerated action to limit global warming to 1.5°C above pre-industrial temperatures. In response to the Glasgow Climate Pact, the UK has revisited its 2030 NDC to ensure it remains a fair and ambitious contribution to global action on climate change. The target is to reduce all gas emissions by at least 68% by 2030 on 1990 levels.

The milestone 2 assessment included a full audit of all operations that produce GHG emissions and covers Scope 1, 2 and a selection of Scope 3 emission categories. This Carbon Reduction Plan (milestone 3) has been developed in line with Baily Garner's aspirations to achieve carbon neutrality in operation by 2030 and represents the first major step in Baily Garner's journey towards lowering their carbon footprint.

The methodology for Scope calculations has previously been explained in the Methodology Statement. In summary, the methodology calls on principles of ISO14064 and the GHG Protocol: A Corporate Accounting and Reporting Standard.

"We recognise the challenges that the climate emergency poses, and are committed to becoming Scope 1 & 2 net zero by 2030"

-Andy Tookey, Baily Garner LLP

Industry Response

The UK's construction industry produced approximately 11.4 million metric tons of carbon dioxide emissions in 2020. This was a reduction of about 11 percent from the previous year and accounted for roughly three percent of the total UK carbon dioxide emissions that year.

The United Kingdom Green Building Council (UKGBC) is a construction industry membership organisation, formed in 2007 which as part of their offering supports organisations by providing Net Zero Carbon Roadmaps specifically for the Construction Industry. The UKGBC estimates that over the past two decades built environment emissions have reduced by approximately 30%, with most purring after 2010 and attributable to a reduction on operational emissions.

At an organisational level in the UK, currently only those companies that are defined as ‘quoted and large unquoted’, must report their GHG emissions pursuant to the alterations to the Companies Act (2006) made in 2019. This is applicable to organisations that exceed at least two of the following three thresholds in the financial year:

- £36m annual turnover
- £18m balance sheet total
- 250 employees

As such, Baily Garner are ahead of the legislative curve, as whilst they do not exceed two of the above points, they are voluntarily opting to conduct an assessment of their Scope 1, 2 and 3 GHG emissions.

1 - *https://www.statista.com/statistics/486106/co2-emission-from-the-construction-industry-uk/*

Section Two

2

Methodology

Scope Definitions

Scope 1

Scope 1 refers to GHG emissions produced directly by the company. Examples include fuel used to provide energy onsite or at office buildings, and burned by company-owned vehicles. A request for information was issued to Baily Garner for utility bills and vehicle mileage data. The information provided was then used in conjunction with governmentally-issued data (see Carbon Data Sources) to calculate Scope 1 emissions.

Scope 2

Scope 2 includes the emissions reported from the generation of purchased electricity that is consumed in an organisations building or by its controlled equipment. The emissions associated with transmission and distribution of the electricity consumed are also included in this scope, as the origin of the electricity at the powerstation is rarely a 100% efficient process, and energy is also lost during the transportation from the powerstation to the end consumer. The energy and carbon associated with this type of loss; 'transmission and distribution', losses are also allocated to the organisations Scope 2 results. Companies should also take into account any additional energy used and account for fugitive emissions (e.g., refrigerant loss or air-conditioning).

Scope 3

Scope 3 encompasses all indirect emissions which are not covered by scope 1 and scope 2. This emission group is then split into fifteen categories, some of which do not apply to the business operations of Baily Garner. This scope includes emissions from items such as purchased goods and services, waste generated in operation and investments.

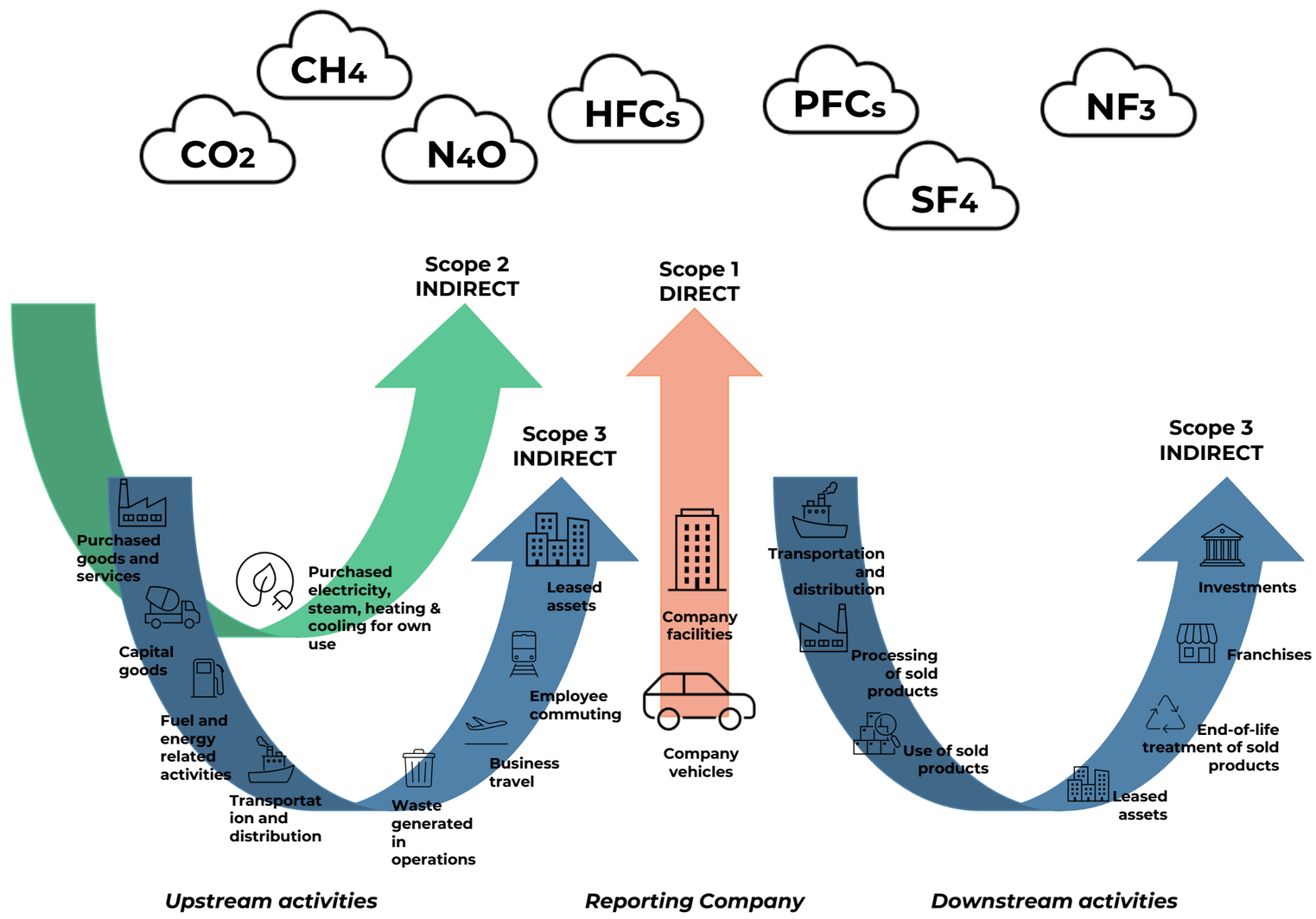


Figure 1: Diagram illustrating emission scopes and sources as defined by the GHG Protocol.

Driving Guidance

GHG Protocol

In accordance with the initial brief, the 'Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard' ("the GHG Protocol") and the UN Race to Zero Guidance has been used as the core methodology for calculating the Scope 1, 2 and 3 emissions for Baily Garner. The GHG Protocol provides requirements and guidance for organisations preparing a corporate-level GHG inventory. It was designed to help companies prepare a GHG inventory that represents a true and fair account of their emissions through the use of standardised approaches and principles. The document was selected due to its ease of accessibility, which should allow BG to carry out further work using the same principles in future if they wished.

ISO14064: Part 1

This document specifies principles and requirements at the organisational level for the quantification and reporting of GHG emissions and removals. It includes requirements for the development, management, reporting and verification of an organisations GHG inventory. This document has been used to support the principles set out in the GHG protocol document.

IWA 42:2022(E) Net Zero Guidelines

IWA 42:2022 has been used to assist in ensuring that the appropriate net zero target and definition for this project includes all relevant Scope 1, 2 and 3 emissions. The document builds on previous standards (such as the GHG protocol) to support organisations in their progress toward a climate positive future.

Climate Change Committee (CCC)

The Climate Change Committee (CCC) is an independent, statutory body established under the Climate Change Act 2008. Their purpose is to advise the UK and devolved governments on emissions targets and to report to Parliament on progress made in reducing greenhouse gas emissions and preparing for and adapting to the impacts of climate change.

The CCC offer an evolving framework, which will continue to update over time and includes targets which may change when new data becomes available.

Specific to the Building industry that the CCC set out a few targets such as:

- Heat demand in buildings needs to fall by over 25% from 2019 to 2035.
- 50% of heat demand in buildings must be met by low-carbon sources by 2035.

Science Based Targets

The Science-Based Targets initiative (SBTi) provides a pathway for companies to reduce their GHG emissions. They deliver guidance for companies to adhere to the minimum requirements needed to meet climate-based scenarios laid out in the 2015 Paris agreement (i.e. ideally 1.5°C, but alternatively 2°C, of global temperature increase compared to preindustrial levels).

Figure 2: Documentation used in defining the methodology for calculating Baily Garner's emissions, drafting future emissions scenarios and setting targets to achieve net-zero.

1 - *https://unfccc.int/climate-action/race-to-zero-campaign*

Driving Guidance: SBTi Framework PROPOSED

SBTi framework

The Science-Based Target Initiative (SBTi) is an organisation which encourages corporate climate action. They provide a methodology for setting company emissions reductions targets. They state that based on current climate science, to keep global warming in line with a well-below 2C reduction scenario, companies should aim to become net-zero by 2050 at the latest.

Criteria outlined in the 'SBTi Criteria and Recommendations' and 'SBTi Corporate Net-Zero Standard Criteria' key documents were used to create targets tailored to Baily Garner.

Criteria for target-setting

Targets constitute a specified carbon emissions reduction goal to be achieved within a given timeframe. They are split further into the type of emission (scope) and must adhere to global warming scenarios laid out in the 2015 Paris Agreement.

Targets are highly specific to a company based on its activities, its commitment to reducing emissions, and its level of agency to make corresponding changes. Criteria for setting targets are therefore based on:

- Understanding a company's current emissions and potential/positioning to reduce them
- Ambition of the company to reduce emissions in line with global warming scenarios
- Establishing a feasible time frame

Emissions pathways

Companies must commit to targets which are compatible with global warming scenarios of either 1.5C warming or well-below 2°C (WB2C) warming. These factors were agreed upon at the 2015 Paris Agreement. Depending on i) which scope the emissions fall under and ii) the time frame, targets are set in line with keeping emissions in accordance with one of these scenarios. For example, SBTi states that scope 1 and 2 targets should be at least as ambitious as aligning emissions with the 1.5C global warming scenario.

Timeframes

The cutoff for reaching net-zero according to SBTi is 2050. Beyond this date, we are likely to overshoot the 1.5C and WB2C scenarios. However, setting near-term targets (i.e. within ten years) are recommended to ensure continued progress towards a long-term goal. This makes sense as a consistent reduction in emissions towards net-zero will likely result in less overall emissions than a business-as-usual (BAU) scenario, followed by a sharp reduction in emissions, even if net-zero is reached at the same target year.

Net-zero:

"Reducing scope 1, 2, and 3 emissions to zero or to a residual level that is consistent with reaching net-zero emissions in eligible 1.5°C-aligned pathways."

+

"Neutralizing any residual emissions at the target year and any emissions thereafter."

- SBTi

Driving Guidance: Setting SBTs for BG

Setting Baily Garner SBTs

The SBTi net-zero standard lays out guidance for companies to reach net-zero by 2050, at the latest. However, an ambitious but credible emissions reductions strategy would set Baily Garner on track to become net-zero across scopes 1, 2 and 3 by 2040 and the SBTs should reflect this.

Spotlight on scope 3

The large majority of Baily Garner's emissions come under Scope 3. As an SME, they are not required to set out a near-term scope 3 target to comply with guidance. However, achieving net-zero in scope 3 by 2030 is likely unachievable, a longer time frame is recommended, so a non-committal near-term target would give Baily Garner an intermediate reduction goal that will stand them in good stead to meet their net-zero target.

Short term scope 3 targets need only adhere to the WB2C reduction scenario.

We have identified some key areas where emissions reductions can be made

More specific guidance in reducing scope 3 emissions is outlined in the 'Carbon Reduction Plan' section.

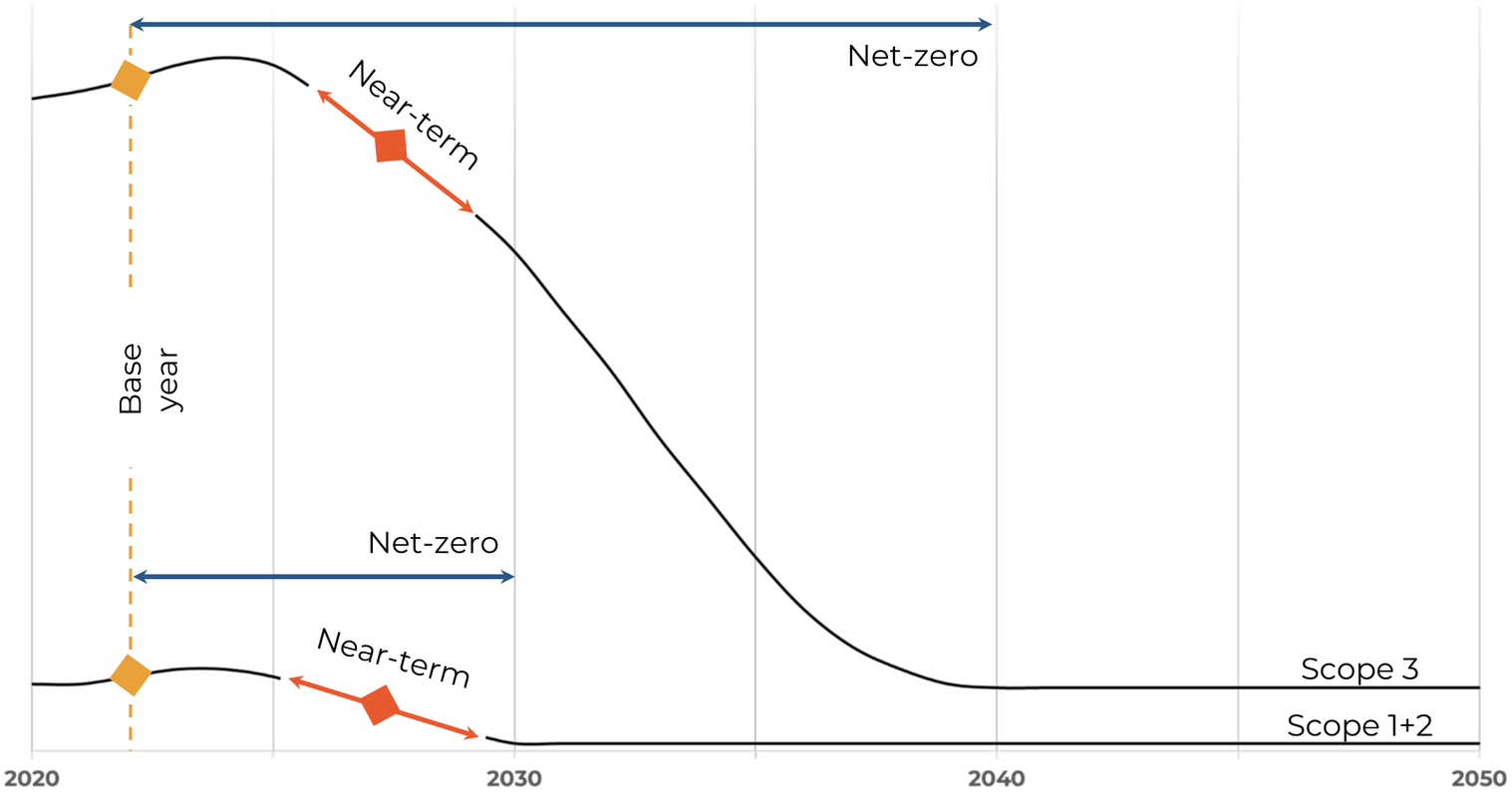


*Figure 3: Diagram summarising BG's carbon emissions targets. **Base year** is shown in yellow, **near-term** target operations are in orange and timeframes for reaching **net-zero** are in blue.*

Methodology: Calculating Emissions

Calculating carbon emissions

Across scopes 1, 2 and 3, carbon emissions can be calculated using the formula:

Emissions = Activity data x Emission factor

Where the **emissions factor** is defined as the carbon emissions associated with a company operation, such as amount of CO2 produced per mile travelled by a petrol car. The **activity data** is the quantity of, or expenditure on, that product or service, such as miles travelled by the same petrol car. Wherever possible, we used activity data supplied by Baily Garner over the time period of October 2021 to September 2022.

Emissions were calculated using one of three methods outline by GHG Protocol:

1. **Supplier-specific:** using emissions data for a good or service provided by the source company
2. **Spend-based**: using expenditure figures provided by Baily Garner and emissions factors available from Environmentally-extended input-output analysis (EEIOs)
3. **Average-data:** using industry average data for the emissions factor of a company operation and corresponding activity data

Carbon Data Sources

A hierarchy of sources was developed to establish carbon emission factors used when calculating Baily Garner emissions. Sources were:

1. Governmental Databanks
   a. **DVLA** (Scope 1 - vehicle carbon emissions)
   b. **DEFRA** (2022) (Scope 1 - 3: energy conversion factors)
2. Supplier Specific (Scope 3)
3. EEIOs (Scope 3 – spend-based data)
4. Secondary data (Scope 3 - average-data)

Calculating scope 1 and 2

Scope 1 and 2 emission estimates were calculated primarily using the supplier-specific method. Energy bills were supplied by Baily Garner and were used to summarise gas and electricity usage. Carbon factors was based on UK governmental data.

Data on the distance travelled by each company-owned vehicle was supplied and corresponding emissions factors for the vehicles was sourced from the DVLA.

Calculating scope 3

Various approaches were used to calculate scope 3 emissions, based on the available data. The spend-based method was used to calculate the emissions of services. Where obtainable, supplier-specific data was used to calculate emissions resulting from purchased goods. For instance, DELL provide carbon factors for their products and Baily Garner supplied information on the number of DELL laptops purchased. However, where no supplier-specific information was available, the average-data method was used,

Further information on methodology is available overleaf.

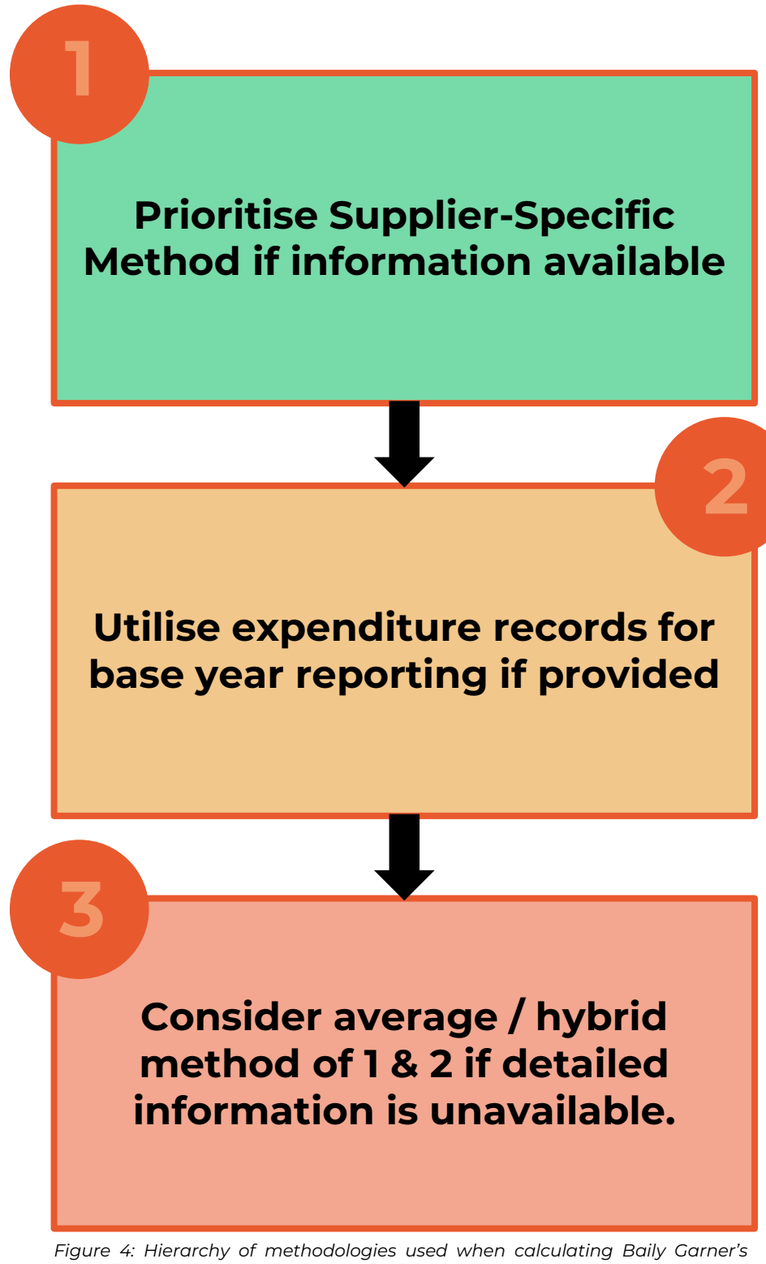


Figure 4: Hierarchy of methodologies used when calculating Baily Garner's Scope 3 Emissions, as set out in the GHG Protocol

Scope Data and Assumptions

Scope & Category	Activity	Data & Approach	Assumptions and Exclusions
Scope 1 Energy	Office gas usage	Gas use (kWh)	For base year no assumptions made. For future retrofit scenarios IES modelling has been used.
Scope 1 Business travel	Travel using petrol/diesel company-owned vehicles	Miles travelled and corresponding emissions factor	Cars perform as efficiently as new. Mileage associated with personal usage has not been included.
Scope 2	Office electricity usage	Electricity use (kWh) and emissions factor	For base year no assumptions made. For future retrofit scenarios IES modelling has been used.-
Scope 3 Purchased goods and services	Purchase of electrical goods Purchase of services	Company expenditure Supplier-specific and spend-based methods	Where used, EEIO data assumes equal emissions for any activity of the same cost, based on most relevant EEIO data.
Scope 3 WTT	Transport of fuel used by company-owned vehicles	Miles travelled and emissions factors	-
Scope 3 Employee commuting	Fuel combustion by employee-owned vehicles on commute	Survey data and government emissions factors	Average commuting data applied based on average staff commuting emissions where not all data is available.
Scope 3 Waste in operations	Office waste	Average-data method	Based on average office based waste in operation.
Scope 3 Upstream leased assets	Water supply and treatment	Government Carbon Factors	Based on staff consumption of 50 litres total water per day.
Scope 3 Investments	Investment	Spend-based method	

Section Three

3 Scope Emission Results

Base Year Results

Base Year Summary: 2021 - 2022

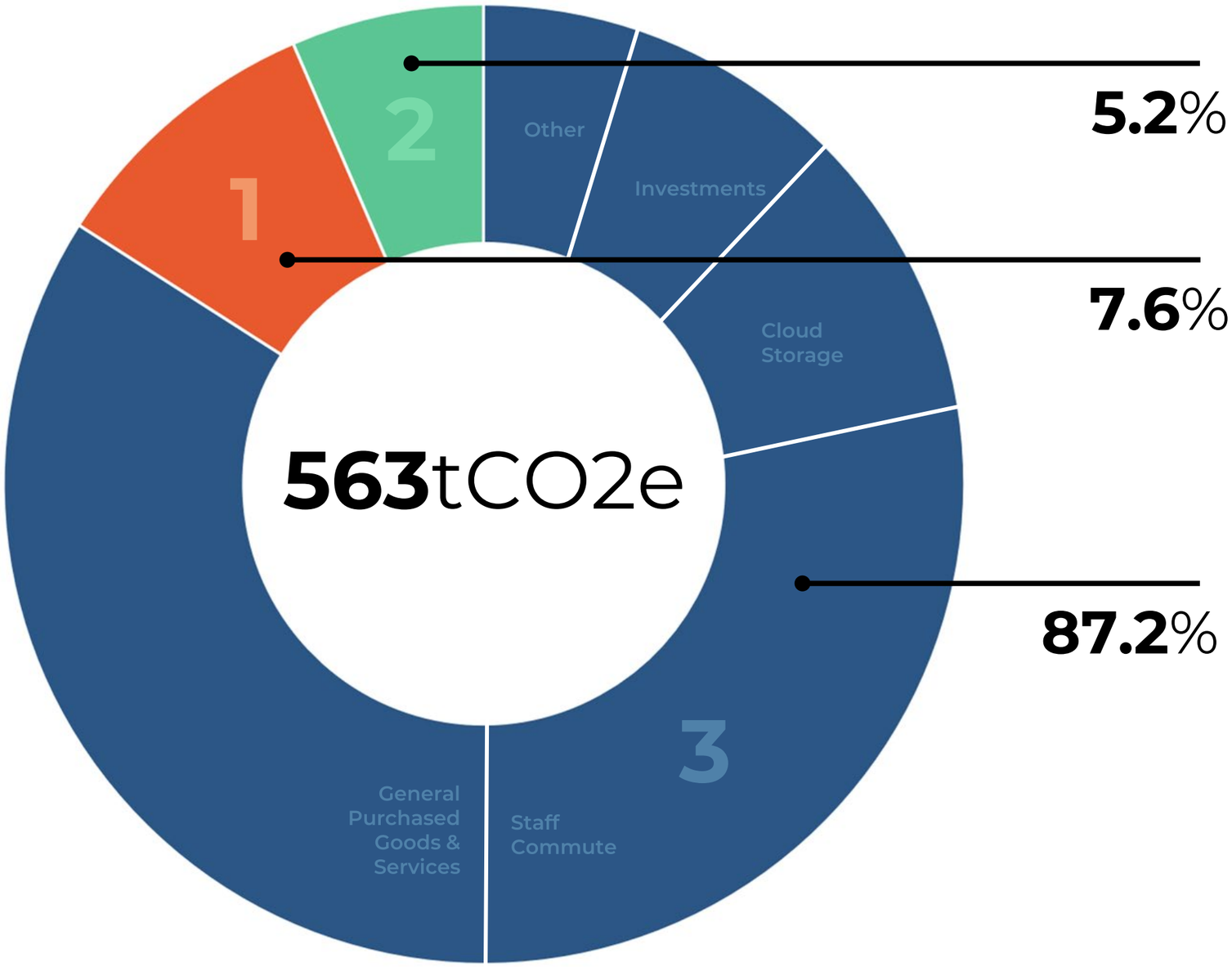
The base year results estimate that Baily Garner's operational GHG footprint is somewhere close to 563 tonnes CO2e.

This can be broken down further into their respective scopes, with Scope 1 representing 7.6%, Scope 2 at 5.2% and Scope 3 at 87.2%, or in tonnes, as per the below:

- **Scope 1** 43 tonnes CO2e
- **Scope 2** 29 tonnes CO2e
- **Scope 3** 491 tonnes CO2e

And again further broken down to:

Scope	Scope Item	Percentage Contribution to overall emissions
1	Office Energy Use (Gas)	5.2%
1	Business Travel (BG Owned Vehicles)	2.3%
2	Office Energy Use (Electricity)	5.2%
2	Business Travel (Owned Vehicles)	0.04%
3	Office Energy Use (WTT)	2.7%
3	Business Travel (WTT)	0.8%
3	Purchased Goods & Services	38.1%
3	Cloud Storage	8.4%
3	Staff Commute	28.9%
3	Water	0.3%
3	Waste	1.9%
3	Investments	6.2%



Scope 1: Analysis

BG Scope 1:
Equivalent to 36 flights to Las Vegas

Baily Garner's scope 1 emissions are primarily made up of their office space heating requirements, using Gas as the primary fuel. Collectively, the operation of the London office represents 22 tonnes CO2e per annum and the smaller Birmingham office accounts for 6 tonnes CO2e.

The fuel usage associated with the business miles covered by the company owned cars contributed a total of 13 tonnes CO2e. LDS calculated the vehicle specific emissions associated with the Government carbon factors, where feasible.

Overall Scope 1 represents a small portion of the total base year emissions compared to Scope 3 emissions. The contributors to Scope 1 are within Baily Garner's operational control, meaning that reducing this Scope will be achievable if Baily Garner were to commit to lowering their emissions as per the SBTi requirements.

Scope 2: Analysis

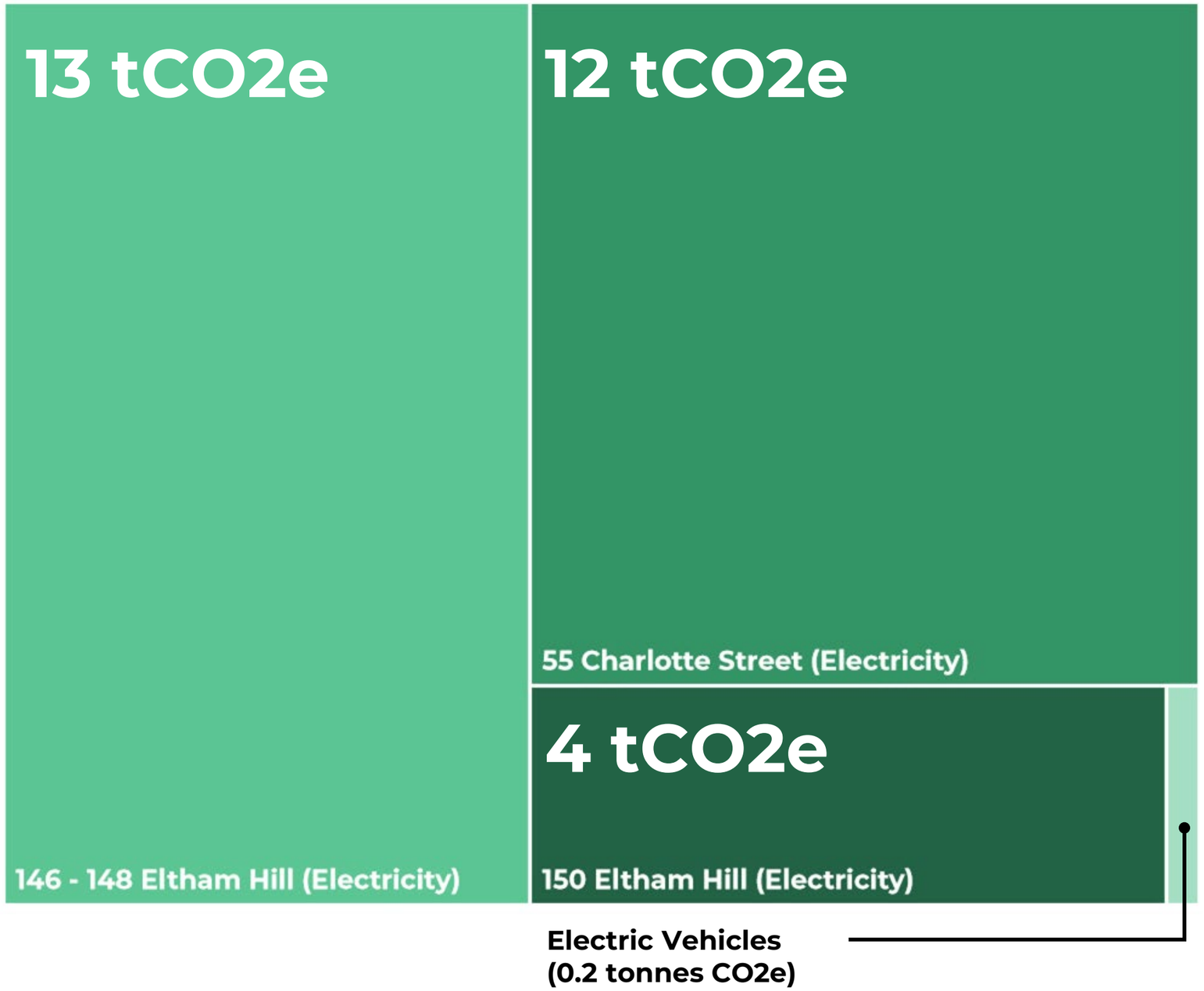
BG Scope 2:
Equivalent to one F1 car completing 75 races

Scope 2 is comprised of the electricity consumed by Baily Garner during the base year, including the electricity consumed by buildings and vehicles.

Baily Garner currently has one electric vehicle in its fleet; therefore, the resultant emissions associated with EVs are very low. The London office has a larger capacity for staff; therefore, it is expected that electricity procurement is higher than Birmingham.

Part of the electricity used in the buildings will contribute to 'regulated' energy use, such as lighting and auxiliary equipment, whereas the remainder will be used in 'unregulated' use. Unregulated energy use refers to appliances, such as Computer equipment, server use, plug-in items, kettles and phone chargers. To understand the proportion of electricity use that is regulated versus unregulated, IES modelling has been used to estimated regulated energy and the residual energy usage associated to the historic energy bills assumed to be from unregulated energy use.

Investigating the unregulated energy use in more detail will be helpful in assessing how far Scope 2 emissions can be reduced. Scope 2 emission reduction should come from improving internal behavioural and building upgrades, before looking to implement a renewable energy tariff.



Scope 3: Analysis

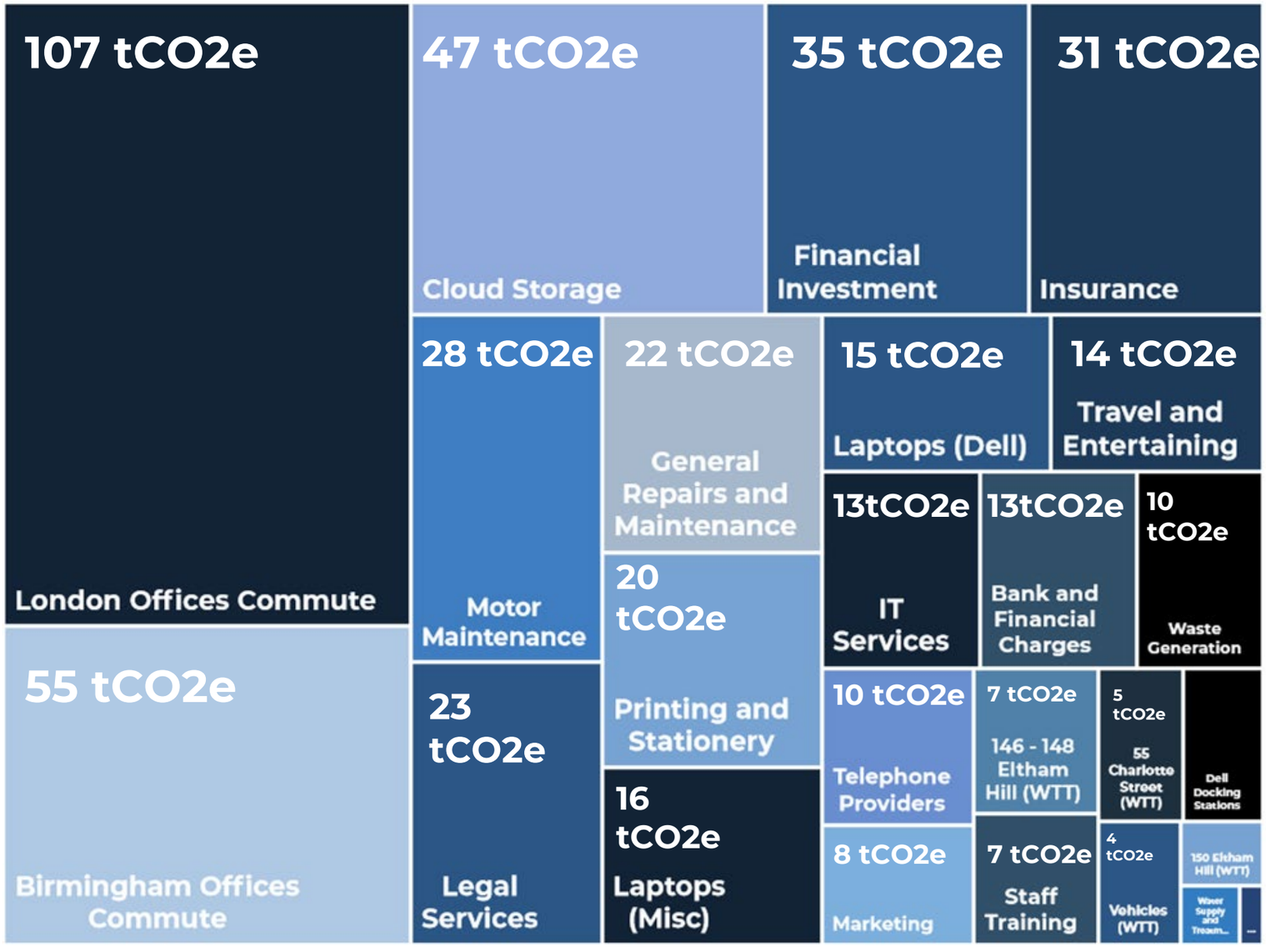
BG Scope 3:
Equivalent to 1 rocket launch

Scope 3 represents the largest contributor to Baily Garner's emissions at 491 tonnes CO2e per annum. The largest contributors are Staff commuting, Cloud Storage and Financial Investment. Where available, supplier specific data has been used, and where not available, EEIOs were used based on Baily Garner's expenditure.

The following categories were deemed relevant to the operation of Baily Garner and listed below:

- **Category 1: Purchased Goods and Services** (Total 262tCO2e)
- **Category 3: Fuel and Energy related activities** (Total 15tCO2e)
- **Category 5: Waste Generated in Operation** (Total 10tCO2e)
- **Category 6: Business Travel** (Total 4tCO2e)
- **Category 7: Employee commuting** (Total 162tCO2e)
- **Category 8: Upstreamed Leased Assets** (Total 47tCO2e)
- **Category 15: Investments** (Total 35tCO2e)

The individual elements of each category are illustrated in the graph to the right.



Scope 1-3: Combined

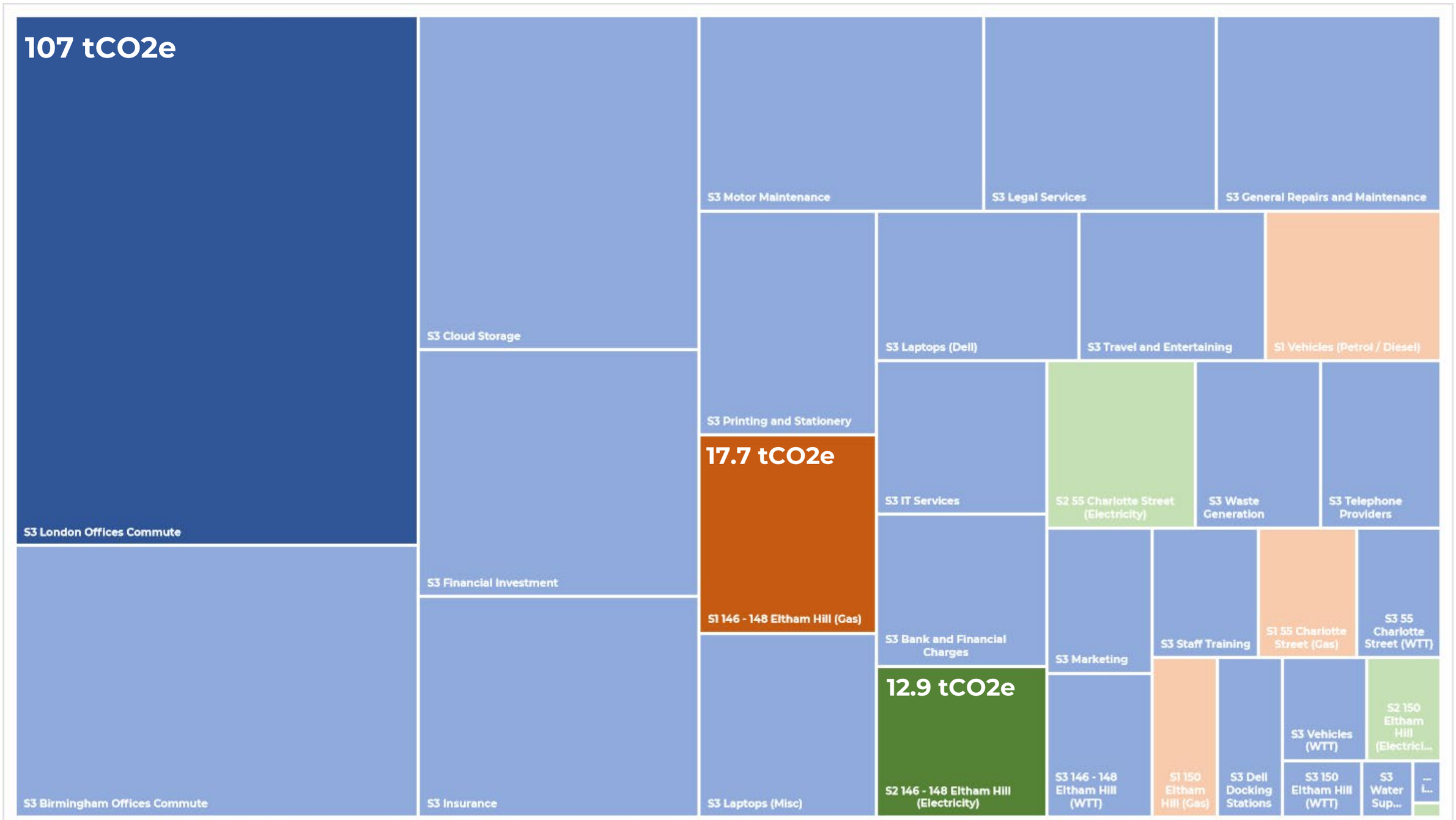


Figure x: Tree map indicating largest GHG contributors to lowest based on information received.. Highlighted in bold are the largest contributors to the various Scope Emissions (Scope 1 - Red, Scope 2 - Green & Scope 3 - Blue

Section Four

4. Targets

SBTi Target Setting: Net-Zero Target

Scope 1 & 2: Net-Zero Target

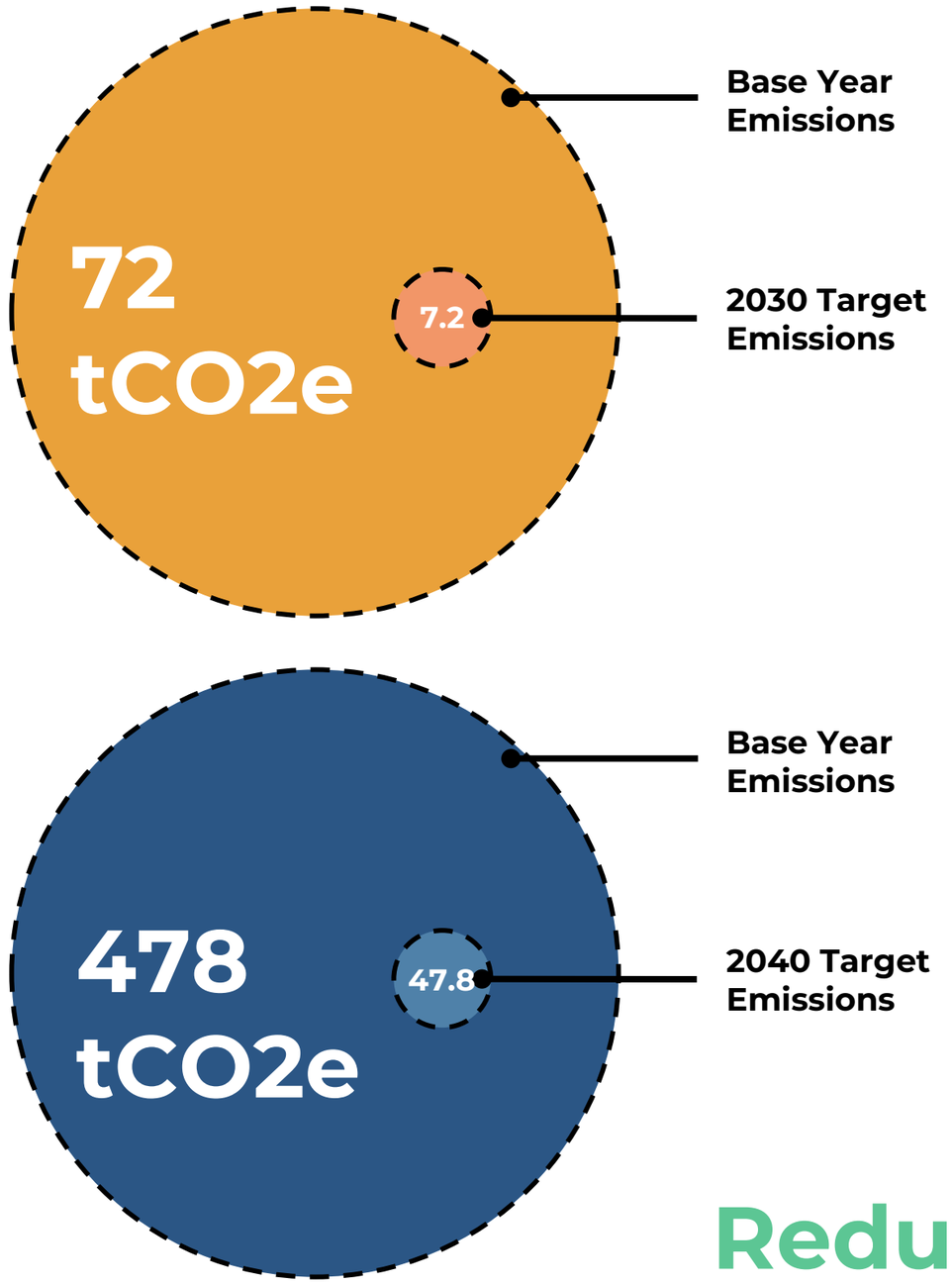
Based on the Absolute Contraction Approach for target-setting and using the Cross-sector pathway, in order to achieve Net-Zero, **Baily Garner must commit to reduce Scope 1 and 2 emissions 90% by 2030** from a 2022 base year. The remaining 10% (and any Scope 1 or 2 emissions released thereafter) must be offset in line with C28 of the SBTi 'Corporate Net-Zero Standard Criteria'. This means reducing total emissions for Scope 1 and 2 from 72 tCO2e in 2022 to 7.2 tCO2e by 2030, with an average reduction of 8.1 tCO2e/year.

As an alternative to setting a Scope 2 emissions reduction target, the SBTi suggests that companies can instead commit to ensure that 80% of its electricity is produced via renewable sources by 2025 then 100% by 2030. Scope 1 emissions would still have to be reduced 90% from 43 tCO2e to 4.3 tCO2e.

Scope 3: Net-Zero Target

Based on the Absolute Contraction Approach for target-setting and using the Cross-sector pathway, in order to achieve Net-Zero, **Baily Garner must commit to reduce Scope 3 emissions 90% by 2040** from a 2022 base year. This would mean reducing emissions from 478 tCOe in 2022 to 47.8 tCO2e in 2040, with an average reduction of 23.9 tCO2e/year. Remaining Scope 3 emissions in 2040 and any produced thereafter should be offset to adhere to net-zero standards.

This target for Scope 3 emissions reductions is in line with C22 in the SBTi 'Corporate Net-Zero Standard Criteria' guidance which states that long-term Scope 3 targets should be in accordance with the level of decarbonisation required to limit global temperature increase to 1.5°C. This is opposed to the minimum reductions for Scope 3 near-term targets, which must only comply with the requirements for the well-below 2°C scenario.



SBTi Target Setting: Near-Term

Scope 1: 1.5°C Near-Term Target

Based on the goal to become net-zero for Scope 1 emissions, in order to stay on course to meet their target, **Baily Garner must commit to reduce Scope 1 emissions 11% each year** from a 2022 base year, assuming linear reduction. This means reducing emissions by an average of 4.8 tCO2e each year until 2030.

Scope 2: 1.5°C Near-Term Target

Based on the goal to become net-zero for Scope 2 emissions, in order to stay on course to meet their target, **Baily Garner must commit to reduce Scope 2 emissions 11% each year** from a 2022 base year, assuming linear reduction. This means reducing emissions by an average of 3.3 tCO2e each year until 2030.

Scope 3: 2°C Near-Term Guidance

As an SME, Baily Garner are not required to commit to any near-term Scope 3 emissions reduction targets. However, in order to meet long-term targets of net-zero, it is recommended that Baily Garner demonstrate ambition to reduce Scope 3 emissions by 2030.

Using the Absolute Contraction Approach for target-setting, in order to adhere to the level of decarbonisation required to limit global temperature increase to well-below 2°C, we recommend that **Baily Garner take steps to reduce Scope 3 emissions 25% by 2030** from a 2022 base year. This would mean reducing emissions from 478 tCOe in 2021 to 359 tCO2e in 2030, with an average reduction of 14.9 tCO2e/year.

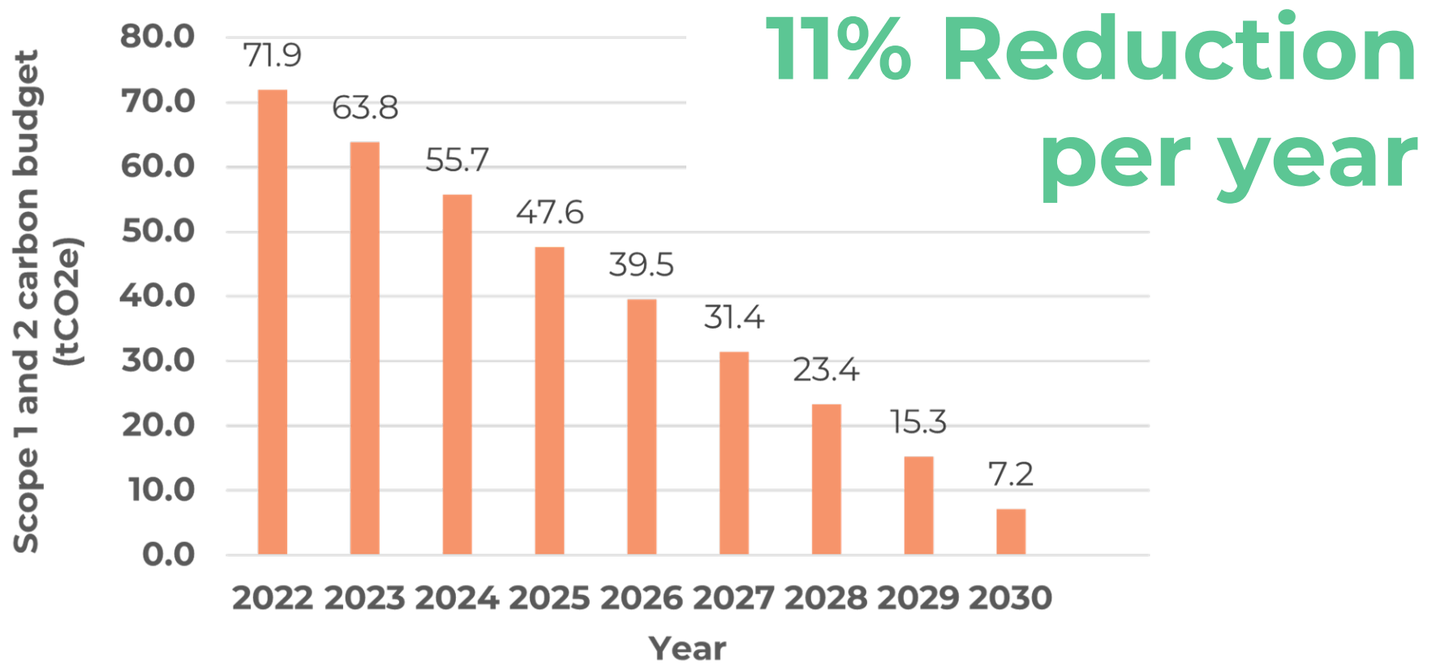


Figure 5: Necessary near-term Scope 1 and 2 emissions reductions

Section Five

5 Carbon Reduction Plan

BG Office Carbon Breakdown

LDS have utilised the IES .cab files received Jan 10 2024 to disaggregate the energy bills into energy subcategories. This was done by utilising the kWh/sqm information found from within the BRUKL outputs which was then converted to kgCO2e.

The disaggregated energy consumption information is presented to the right which includes:

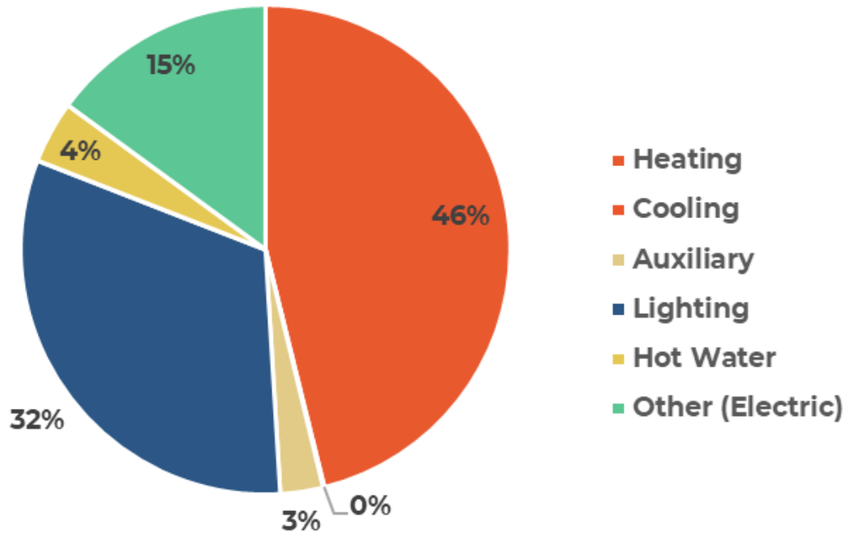
- Space Heating
- Cooling
- Aux
- Lighting &
- Hot Water.

The remaining 'other' represents all other information such as computers, lifts etc. that is unaccounted for in the IES models, known as 'unregulated'.

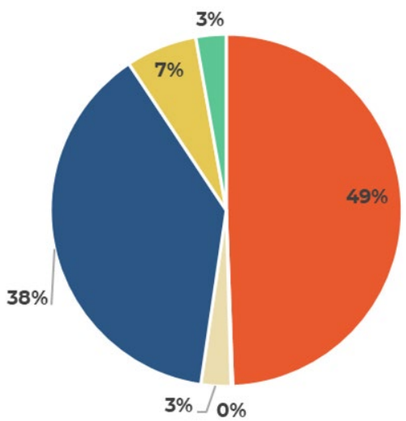
It is estimated that space heating, lighting and 'unregulated' emissions are the greatest points of interest for reducing energy consumption onsite.

It should be noted that the BRUKL reporting is a crass way of predicting existing energy consumption as it assumed National Calculation Method (NCM) behaviour profiles. Further investigation along with occupational surveys, management interviews and site surveys are required to confirm the accuracy of the IES models provided.

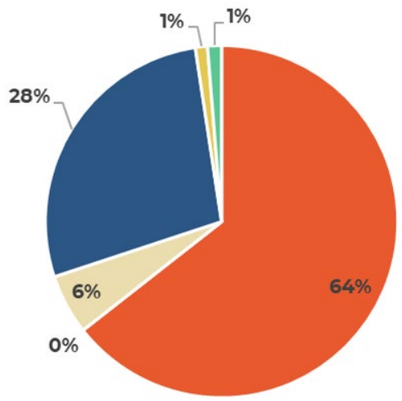
An alternative methodology for estimating the sub categorised energy usage on site may be to carry out a detailed energy audit walk-around along with detailed CIBSE TM54 analysis, or measuring number of people using the building and for how long.



BG Office Buildings Carbon Breakdown



146 - 148 Eltham Hill



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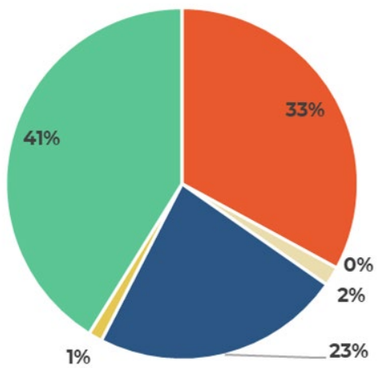


55 Charlotte Street

CO2 Reduction Summary

Scope 1: Reduction Opportunities

Scope 1 emissions can be reduced through two key strategies. The first of which relies on BG investigating further retrofit measures to their office buildings and the second relies on BG phasing out fossil-fuel company cars and making the switch to an electric fleet over time and a focus on sustainable public transport.

Scope 1 presents an opportunity to reduce emissions by at least **37.8 tCO2e** by 2030.

Scope 2: Reduction Opportunities

Following swapping over from fossil fuel building services and vehicles, BG should investigate the feasibility of renewable energy tariffs to find a tariff that is both financially viable, and provides BG with an energy mix that aligns with the CO2 reduction goals. There is an opportunity to carry out a more intensive audit of the building emissions associated with the three office spaces including CIBSE TM54 analysis.

Scope 2 presents an opportunity to reduce emissions by at least **26.1 tCO2e by 2030.**

Scope 3: Reduction Opportunities

Scope 3 Emissions are typically harder to monitor and reduce. BG should investigate the supply chains of their Purchased Goods and Services to seek lower carbon alternatives and work with companies that are also on the road to net zero carbon. Another key focus area should be the introduction of travel plans and updated office facilities to encourage staff to use more public transport and active travel to commute to work, spending time on maximising the opportunities for hybrid working.

Scope 3 presents an opportunity to reduce emissions by **430.2 tCO2e by 2030.**

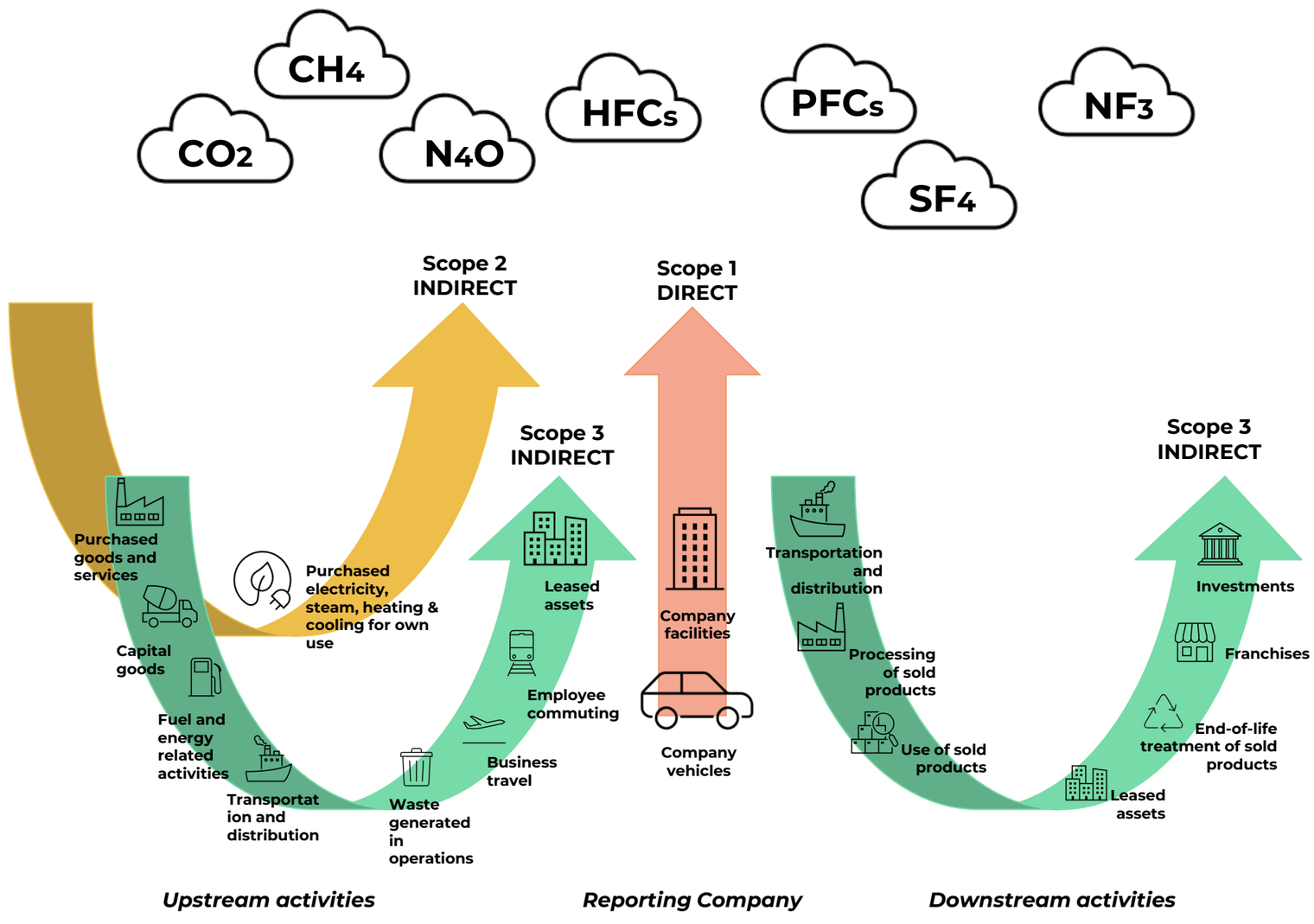


Figure 6: Diagram illustrating emission scopes and sources as defined by the GHG Protocol.

Scope 1 & 2: Office Retrofit Plan

LDS have carried out iterative steps to understand what the savings may be from implementing retrofit and refurbishment changes at the three offices (please see model assumptions in Appendix B).

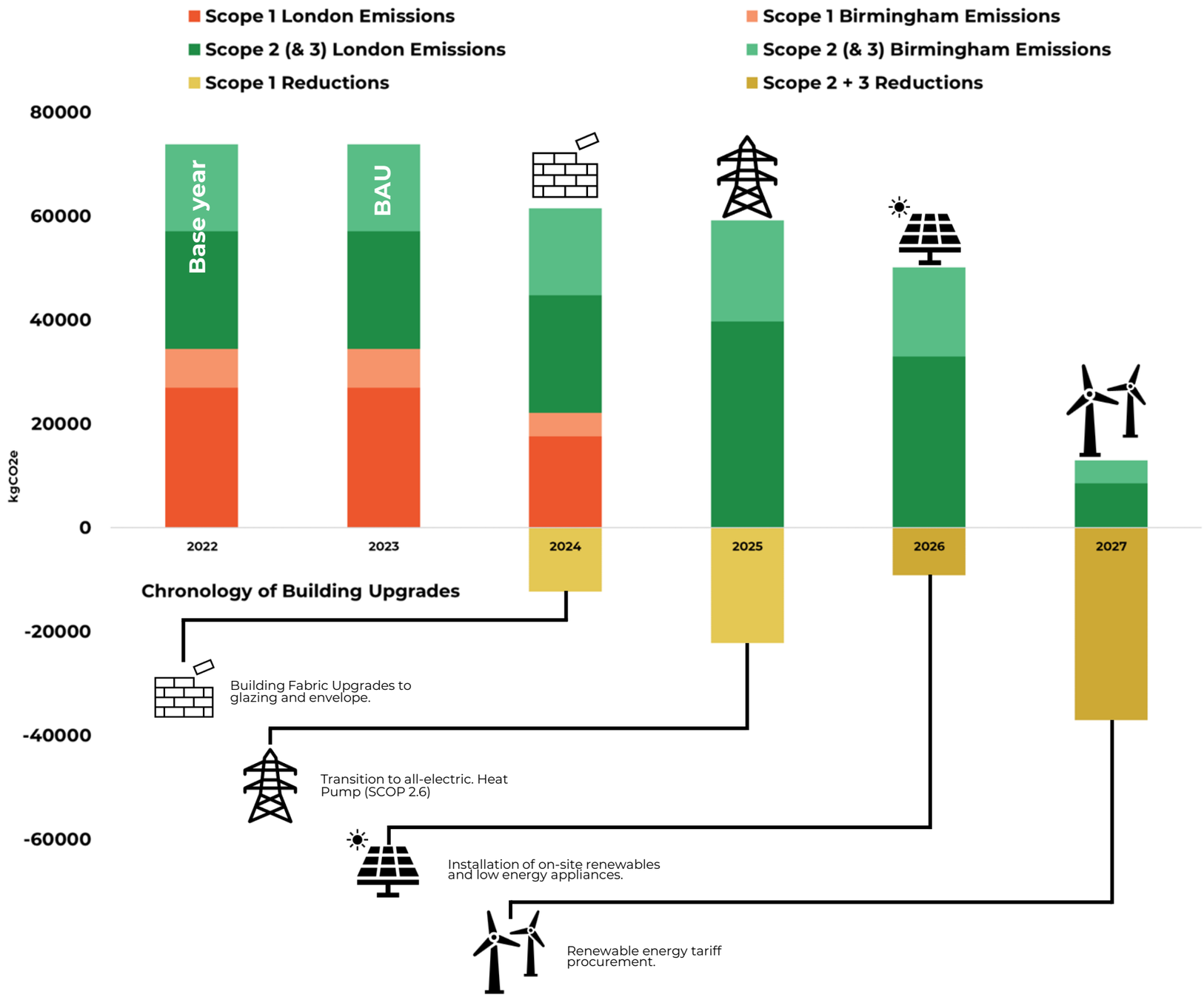
The upgrades considered (in order) were:

A. Improved Rooflights & Glazing, Improved Building Fabric Insulation
B. Replace Gas Boilers with Heat Pumps
C. All lighting LED & Automatic Lighting Controls, Solar Photovoltaic Solar Panels to roofs
D. Procurement of Renewable Energy Tariff (that adds additionality in compliance with SBTi and UKGBC requirements).

The graph to the right captures all emissions associated with Baily Garner's energy usage, combining scope 1, 2 and 3 emissions. The scenario illustrated is indicative only, and based on BG applying the energy hierarchy; Be Lean, Be Clean, Be Green. BG could opt to implement these measures in a different order, and with a different retrofit approach.

- **(A)** Reduce BG's annual emissions by approximately **12,000** kgCO2e/ per annum.
- **(B)** Could reduce BG's annual emissions by approximately **20,000** kgCO2e/ per annum.
- **(C)** Could save approximately **9,000** kgCO2e/ per annum.
- **(D)** could save approximately **37,000** kgCO2e / per annum.

The remaining emissions could then be offset using a VCS or Gold Standard carbon offsetting scheme. See page 36 for further information on carbon offsetting.



Scope 1 & 2: BG Vehicle Fleet

Trickle-down effect

Though switching fleet of vehicles from fossil-fuel to electric is projected to reduce scope 1 emissions significantly, it will trigger an increase in scope 2 emissions as a result of increased electricity demand. Scope 3 emissions are also likely to increase due to the emissions associated with the transport and distribution of electricity.

Methodology

Baily Garner have begun a car replacement schedule which requires vehicles 5 years of age (or having travelled over 100,000 miles) should be replaced.. Based on this information and the assumption that all new vehicles were electric, a rate of EV acquisition was calculated. Using government-issued emission factors, the corresponding carbon emissions were calculated as Baily Garner transition from a predominantly fossil fuel-powered vehicle fleet to an EV fleet up to 2030, the target year for scope 1 and 2 net-zero.

Plan of action

Baily Garner should consider phasing the transition to EVs as the embodied carbon associated with the production of a new electric vehicle results in emissions of approximately 10 tonnes CO2e. Therefore, EVs should only be introduced when looking to replace an existing combustion fuelled vehicle. We suggest that Baily Garner continue to use vehicles for a similar timeframe as at present. The graph to the right works on the assumption that 3-4 new EVs are introduced each year on average, which could increase 'Scope 3: Purchased Goods' emissions by between **20-30tCO2e** respectively.

In order to facilitate the transition to EVs, charging points should be installed on-site. This gives Baily Garner control over the source of electricity used to charge vehicles,

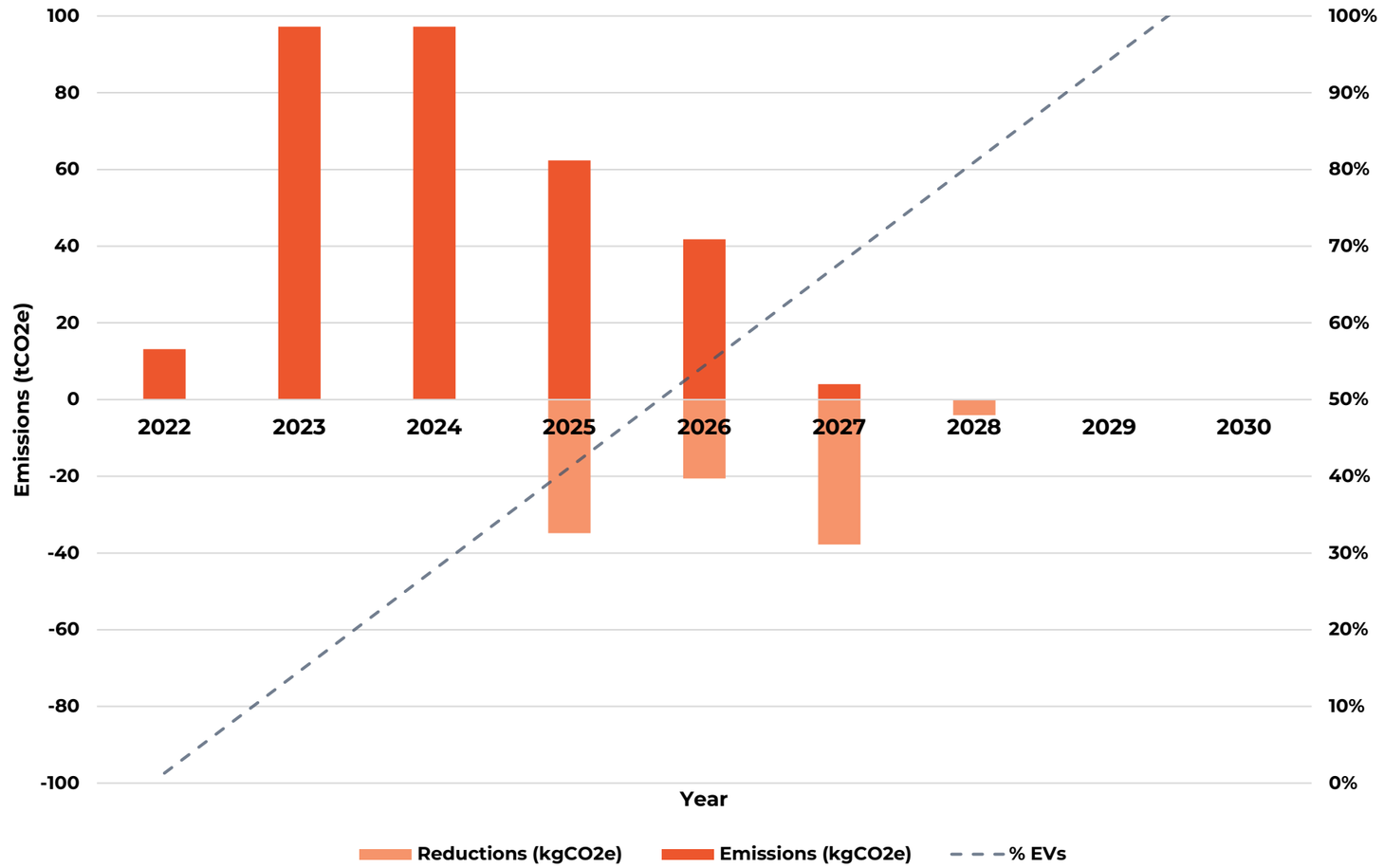


Figure 7: Graph showing how scope 1 emissions will change as BG's vehicle fleet transitions to EVs. In line with the net-zero by 2030 target, this strategy will eliminate eliminate all corresponding emissions by 2029.

Scope 3 Action Plan: Staff Commute

Active commuting

Baily Garner could reduce emissions significantly by encouraging employees to either walk or cycle into work, as opposed to driving. Staff commuting accounted for about 150 tCO2e in the base year 2022. These are emissions that could be reduced significantly through encouraging employees to adopt active commuting.

To do so, Baily Garner should consider introducing a cycle-to-work scheme which allows employees to buy a bike and cycling equipment partially funded by the employer. This is paid back over time via monthly deductions in salary taken before tax. Popular UK schemes include Cycle Scheme, for example

Travel plan

To assist in promoting active transport to work, BG could consider developing Travel Plans for each of their offices, that sets out all routes and public transport accessibility to ensure staff are aware of opportunities specific to each office..

Encourage use of public transport

Encouraging employees to use public transport, both for commuting and business travel, would significantly decrease Baily Garner's emissions and also reduces the need for vehicle maintenance which incur further emissions. Similarly, car pooling schemes encourage employees to share lifts when they have a similar commute.

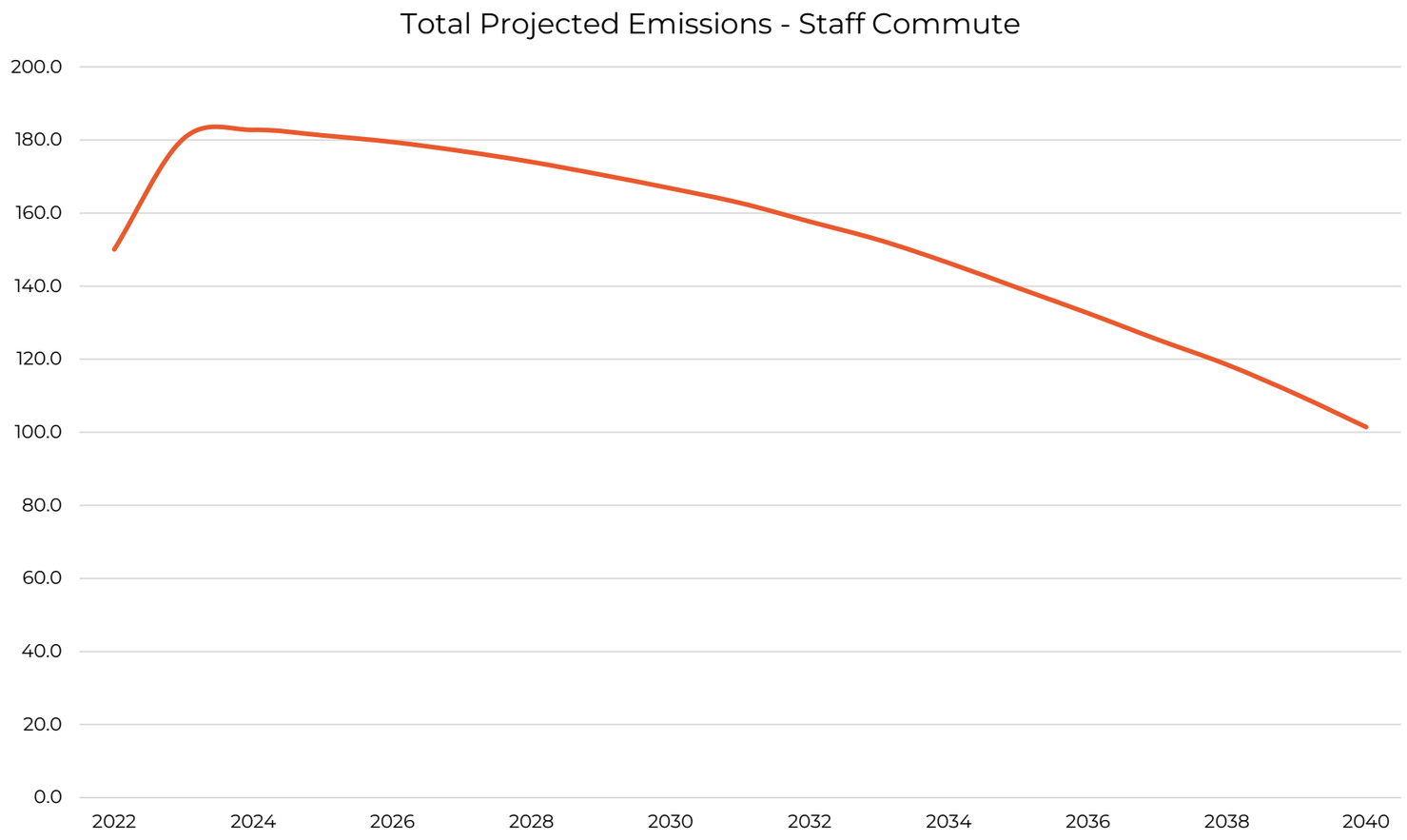


Figure 8: Emissions associated with staff commuting running from the base year to net-zero target year.

Note: this is a conservative estimate based on an assumption of consistent reductions in emissions. A more ambitious strategy would likely reduce emissions far more significantly.

Scope 3 Action Plan: Purchased Goods

Circular procurement

Adopting circular economy principles into a business' operations can help to reduce emissions by limiting the extraction of raw materials, buying and selling goods which last longer, and avoiding emissions resulting from end-of-use.

Plan of action

Information on purchased goods provided to LDS by Baily Garner was focused on their use of IT equipment. Purchases made were mainly laptops, iPads and docking stations. Currently, all goods are purchased from new. However, refurbishing a laptop rather than buying a new one, for example, can reduce associated emissions by as much as 37% (3stepIT Sustainability Report 2019), without affecting performance. Buying refurbished goods from vendors also has a significant impact and this is a change that can be made almost immediately.

Accounting for company growth and assuming a consistent trend of purchasing year-on-year, we calculated that Baily Garner could aim to reduce emissions by over 8000 tCO2e in total by 2040, simply by introducing more sustainable procurement practices.

However, there are likely to be other purchased goods not related to IT equipment which understandably have their own associated emissions. To gain a more holistic understanding of category 1 emissions, Baily Garner should aim to

- Purchase from suppliers with transparent emissions data wherever possible
- Keep a record of all purchased goods and their associated suppliers

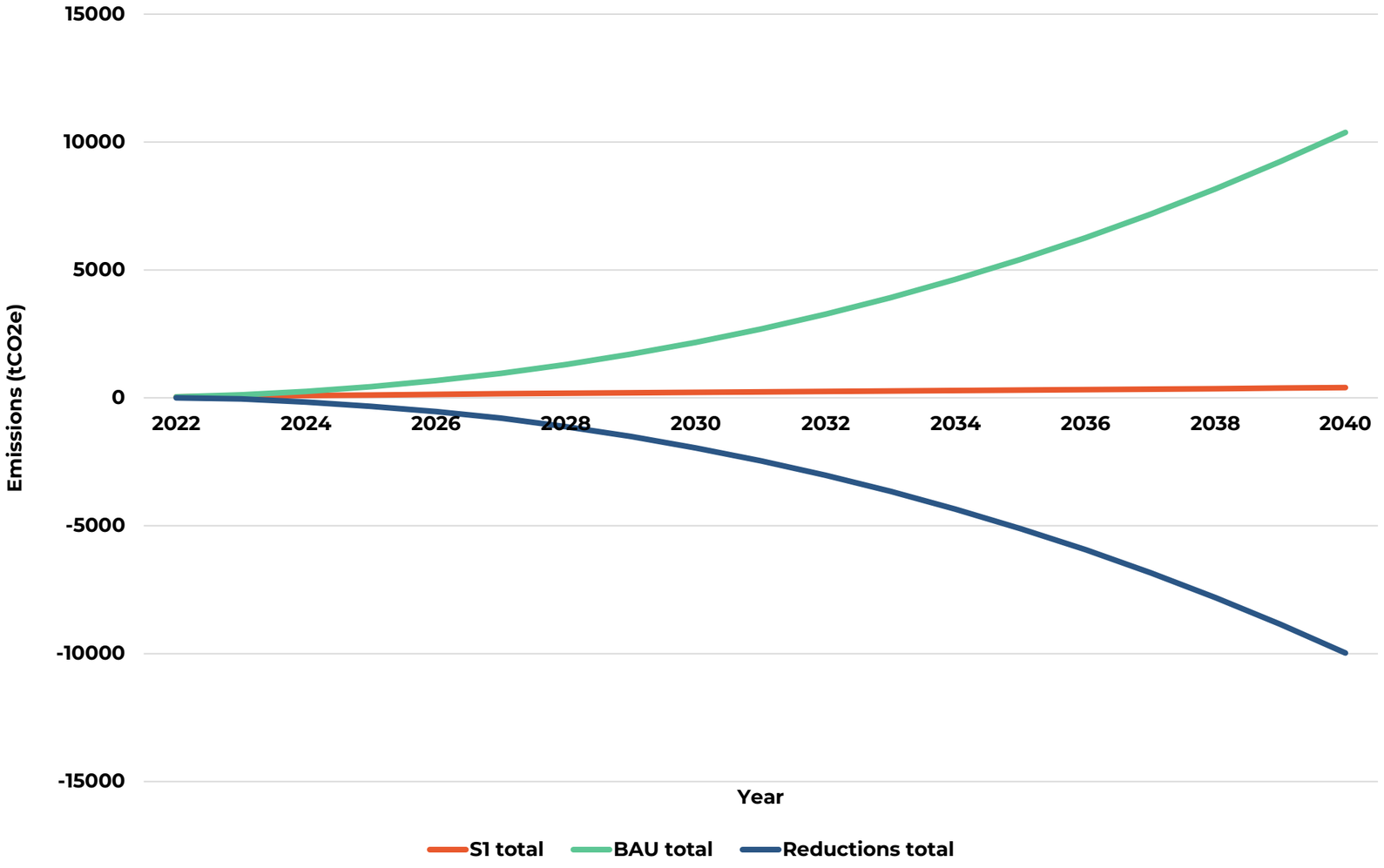


*Figure 9: Graph demonstrating the total cumulative emissions for a **business-as-usual** scenario compared with a **reductions strategy** scenario based on adopting a circular approach to procurement..*

Scope 3 Action Plan: Purchased Services

Category 1: Purchased Services

In practice, monitoring emissions from third party services providers will need to be achieved through supply chain engagement. Baily Garner should liaise with their current providers of:

- IT Services
- Printing and Stationary
- Legal Advisors
- Insurance Providers
- Telephone Providers
- Banking Service
- Marketing Company;

to understand whether these organisations are on a similar GHG reduction journey. If it transpires that the companies in question are also looking to adhere to the SBTi targets, then, by default, both their emission and your emission targets will be aligned and, therefore, this category will be easily achievable. For instance, Moody's LLP have committed to Science Based Targets. BG should, at a minimum, aim to appoint companies who are monitoring their own S1, 2 and 3 emissions.

Items that are within the operational control of BG are:

- Staff Training
- Travel and entertaining
- Banking
- Cloud services

BG should review current practices and spending associated with these items and assess for low carbon alternatives, including encouraging multiple staff to attend the same online training session, banking with a climate conscious bank, transitioning to a green cloud option and reviewing travel and entertaining policies.

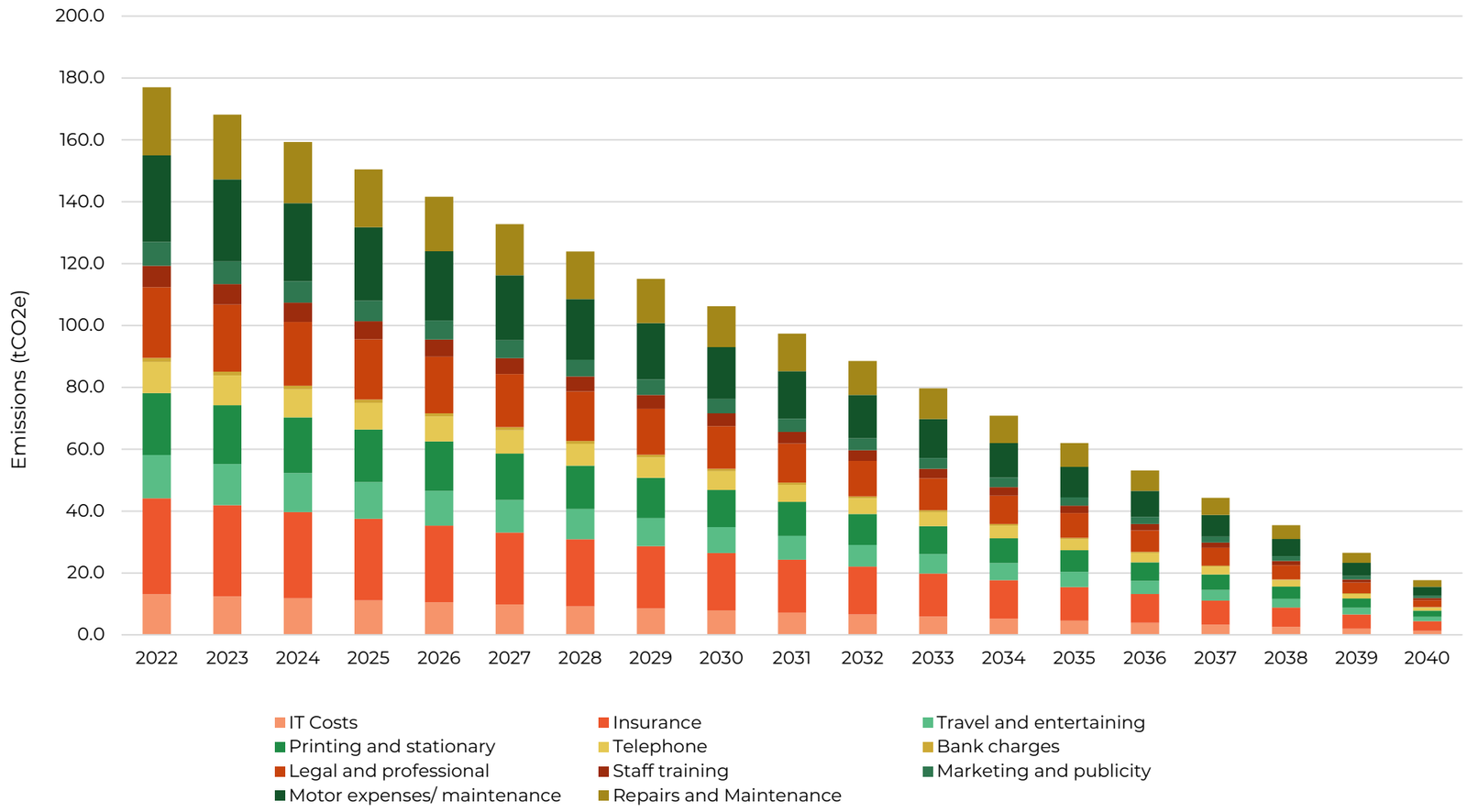


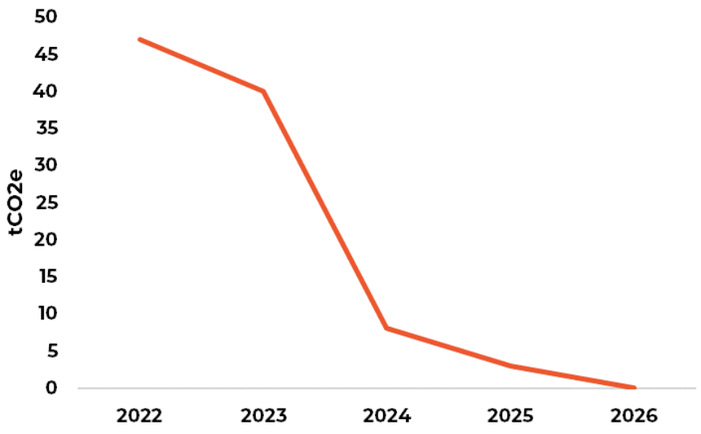
Figure 9: Graph showing the distribution of scope 3 emissions resulting from purchased services and their corresponding projections in line with our reduction strategy scenario. Successful enactment of this strategy would see annual emissions fall from 177 to 18 tCO2e.

Scope 3 Action Plan: Cloud, Waste and Investment

Cloud Storage

Baily Garner currently store approximately 49 terabytes of data on the cloud, across VEEAM, Wasabi, Microsoft and Citrix. Approximately 3-7 kWh is required per annum to store each GB of data on the cloud. This means cloud storage can end up using a lot of energy and have a high associated carbon footprint, in BG's instance, this equates to approximately 47tCO2e per annum.

The majority of BG's data is stored on VEEAM (80%) and Wasabi (17%). LDS contacted both providers and interrogated online sources, but no information was available in relation to either organisations ESG approach, or energy procurement. Microsoft have an extensive approach to reducing their carbon footprint, and aim to be carbon neutral by 2025. Sharefile is powered by Citrix and recognised to be a useful tool in dynamic working environments. Therefore, BG should consider moving their cloud based information currently stored with VEEAM and Wasabi, to a provider that is actively working toward lowering their emissions as an organisation, Microsoft represents a good example, and there are also more innovative solutions out there, such as 'Leaf Cloud'. The graph below illustrates how BG's cloud emissions could be reduced to ~0 by 2026 through transferring data to more sustainable suppliers.



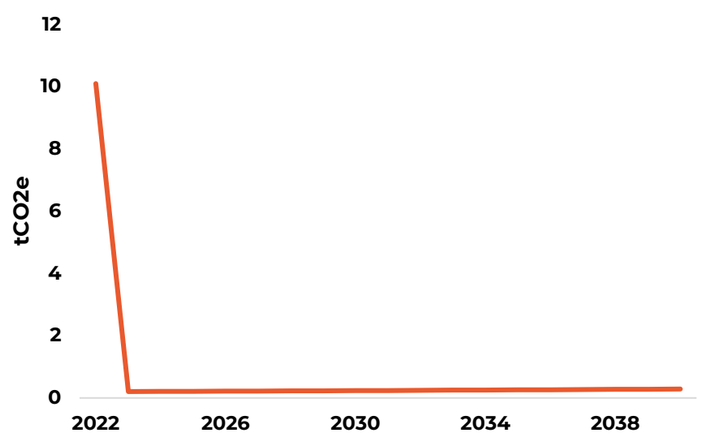
Waste Generation

Based on the average-data method, we estimate that Baily Garner produce around 85 tonnes of waste across all three offices per year. This figure is due to rise in line with company growth projections. As a result, there is a need to implicate a scheme which adopts a more circular approach.

As much as 70% of waste produced by commercial operations is paper-based products. Other key types of waste are organic food waste, plastics and electrical equipment, for example. To reduce emissions associated with office-produced waste, there are a number of steps BG can take, including:

- Carrying out a waste audit to quantify waste types and quantities
- Set up centralised recycling and waste stations
- Create a team of employees to monitor waste creation and encourage individual accountability

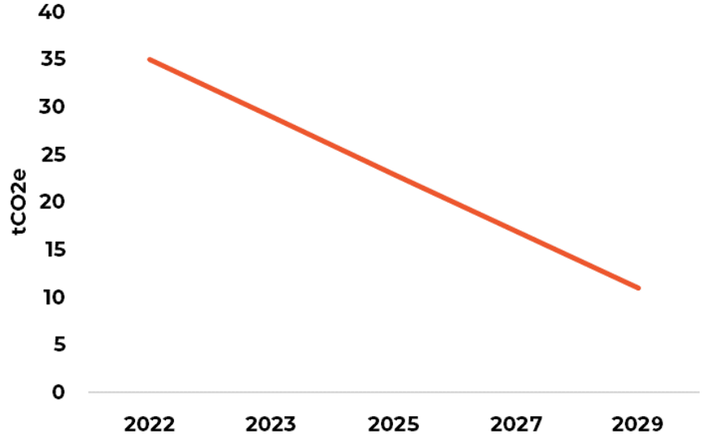
Further details on how to introduce a circular business model and eliminate waste are laid in a report by the Ellen Macarthur Foundation.



Investment

BG currently invests in a fund provided by Scottish Widows. According to Scottish Widows Climate Action Plan, the emissions associated each £100k invested in their fund are approximately 11.6tCO2e. Based on data obtained from companies house, it is estimated that BG hold approximately £300,000 within this fund, and, therefore, the corresponding emissions equate to ~35tCO2e per annum.

BG should investigate, with the aid of a financial adviser, the feasibility of transferring their holdings and future investments to a low carbon focused fund, such as JP Morgan's Climate Change Solutions Exchange Traded Fund, at 3.8tCO2e per £100k per annum. Alternatively, a better solution would be to invest in directly owned renewable energy projects, e.g. developing and delivering solar farms in the UK and procuring RECO certificates for use by BG. The graph below illustrates a potential investment decarbonisation scenario, reflecting 25% of BG's holding in Scottish Widows being transferred to a low carbon fund every 2 years.



Scope 3 Action Plan: Supply Chain Engagement

Supply chain focus

Supply chain engagement involves approaching suppliers to encourage them to adopt sustainable practices and set their own SBTs. This is a proven way of reducing emissions.

The upstream emissions from purchased goods calculated as part of this report reflect only those produced as a result of IIT equipment procurement. Reduction of emissions of this type can be achieved through introducing more circular principles, for example. In actuality, Baily Garner's purchases are likely more extensive than this and so there is a need to work with suppliers to reduce upstream emissions unaccounted for within this report.

Scope

Supplier engagement generally refers to those supplying purchased goods and services. For Baily Garner, emissions from these sources accounts for 3x the amount of emissions of their direct operations (not including cloud storage). This can be reduced further by encouraging supplier's to set their own SBTs. The CDP have created a methodology to achieve this, which is laid out in figure 10.

Case study: Moody's (2021 Supplier Engagement Leader)

- 60% of Moody's suppliers to have science-based targets by 2025
- Moody's sourcing managers must complete a responsible sourcing module

Plan of action

For Baily Garner, the process of supplier engagement should involve:

- Joining CDP Supply Chain scheme to help with engaging suppliers
- Training staff involved with procurement on responsible sourcing (e.g. CIPS: Ethical and Responsible Sourcing)

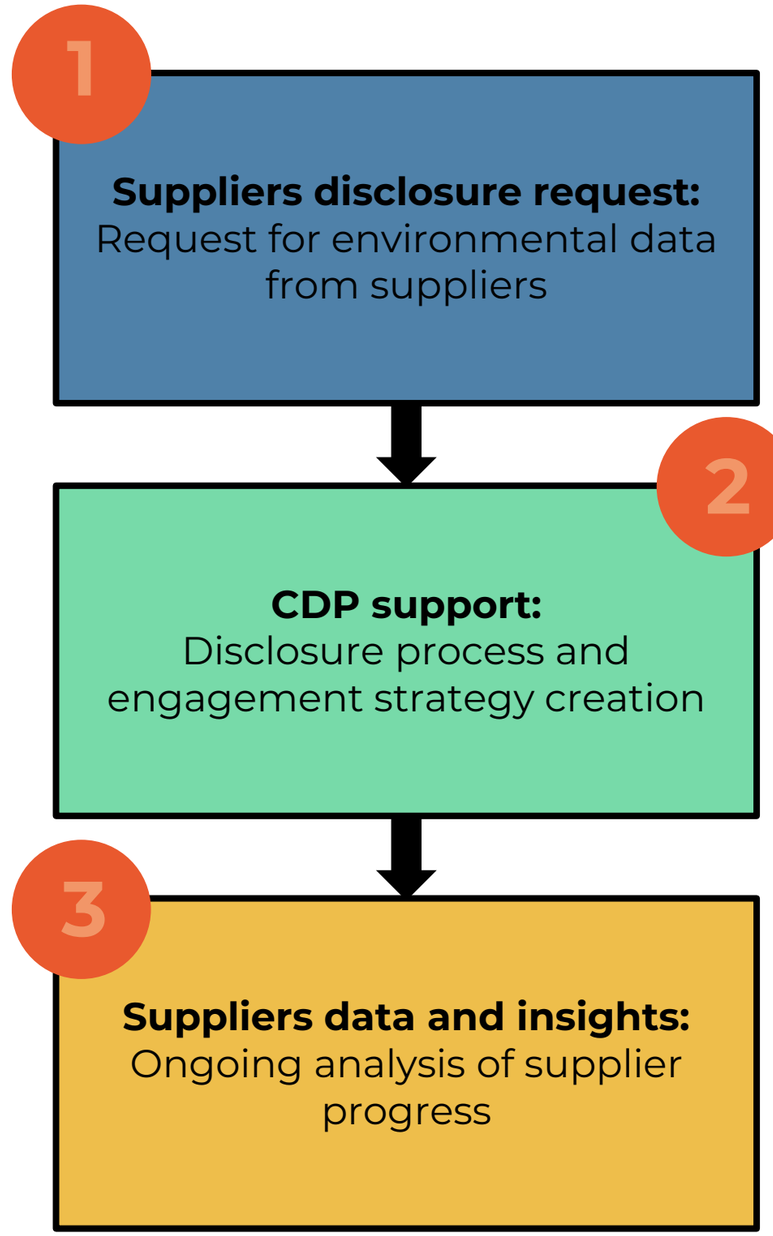


Figure 10: Process of supplier engagement as laid out by CDP

1 *- ENGAGING THE CHAIN: DRIVING SPEED AND SCALE CDP - Global Supply Chain Report 2021*
2 *- CDP: Supply Chain*

BG Staff Engagement: Non-tangible measures

Scope 1: Reduction Ideas

Office Champion: BG to appoint an 'Office Champion' at each office to ensure:

- Record and maintain thermostat temperatures
- Unregulated appliances recorded (e.g. fan heaters)
- Monitor and regulate staff operation, thermal comfort of services (e.g. record instances where one staff member might be cold and turning thermostat up, whilst another is too hot and opening windows)
- Report performance to senior management monthly of any issue

Energy Reporting and Incentives: BG to install energy monitoring devices at each office and:

- Make energy usage data and CO2 emissions from each office readily available to staff
- Consider implementing an energy usage competition (based on kWh per m2) between offices, rewards could be along the lines of '1x 10am start for all staff in Q3'.
- Alternatively, set kWh / m2 targets for office consumption to avoid competition and staff working at potentially uncomfortable temperatures.

Encourage online meetings and public transport: BG to develop incentives and policy for non-car business travel including:

- Prioritising online meetings where possible
- Where online meetings are not available, promoting the use of public transport above
- Consider rewards for staff that make the largest transition.

Staff Engagement Sessions: to ensure staff and management are aligned in strategy, covering

- General thermal comfort of staff
- Understanding staff suggestions
- Explanation of how these measures lower BG GHG emissions.

Scope 2: Reduction Ideas

Office Champion: BG to appoint an 'Office Champion' at each office to ensure:

- Record and monitor electrical energy readings
- Record unregulated appliances usage by staff (e.g. phone chargers / battery packs)
- Report energy usage and figures to senior management monthly
- Consider one champion to monitor both thermal comfort and electricity usage.

Smart Meters and Plugs: to provide accurate and real time electricity usage, covering:

- Electricity usage per desk and per BG owned appliances
- Easy display for staff to observe, and area based monitoring (floor by floor / department by department)

Smart Strips: to ensure all appliances are turned off overnight, including:

- PC monitors, coffee machines, copiers - any appliances that use 'standby energy'.

Policy on Appliances: to prevent installation of energy intensive appliances, including:

- Reviewing energy performance of new equipment and setting a minimum criteria, e.g. all appliances must achieve 'B' on ENERG labels.
- When updating leased equipment, e.g. copiers, apply a similar approach.

Scope 3: Reduction Ideas

Increased Recycling Policy: BG to investigate most frequent common waste and:

- Liaise with staff to understand types of common waste, and whether staff understand ways to recycle waste (e.g. batteries)
- Develop a strategy to encourage staff recycling - e.g. transparent bins.

Circular Economy Workshops: BG to host workshops for staff promoting:

- Reupholstering of office furniture - staff to bring broken chairs etc. for repair to team in office
- Refurbishing of IT equipment - open workshop for staff to bring faulty laptops / phones for repair to team in office

Home Life Surveys: BG to liaise with staff to:

- Understand if staff are looking to purchase a new vehicle, if they are, offer a contribution toward an electric vehicle
- Understand how often staff work from home, and whether they plan home extensions upgrades - consider offering bonuses in the form of retrofit upgrades.

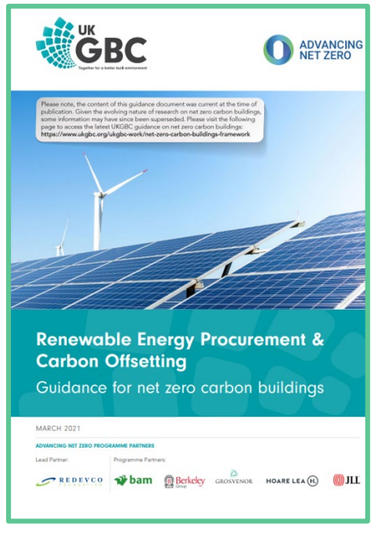
Renewable Energy and Carbon Offsetting

Renewable Energy Tariff Procurement

Companies in the UK which provide electricity from 100% renewable sources (so-called '**high quality green tariffs**') include Bulb, Ecotricity and Octopus Energy. British Gas (Baily Garner's current provider) reports that 48% of their electricity comes from renewable sources [British Gas and Electricity Info].

In line with guidance from the SBTi and the UKGBC, in order to adhere to 1.5C global warming scenario standards, businesses should aspire to use 80% renewable energy by 2025 and 100% by 2030. This should therefore be a priority for Baily Garner in their journey to net zero.

It is important that the renewable energy tariff complies with the requirements of the UKGBC guidance on this topic, and adds 'additionality'; whereby the energy provider installs renewable energy facilities. Otherwise, a provider can buy a 'REGO' certificate, but might not have contributed any real renewable energy generation to the grid.



Carbon Offsetting Standards

Carbon offsetting is the process of eliminating emissions or storing carbon to compensate for emissions produced elsewhere. Carbon offsets can be purchased, where one credit is equivalent to one metric ton of CO2, with the money going towards projects which actively reduce carbon emissions, such as through planting trees or other forms of carbon sequestration.

SBTi requirements do not stipulate that carbon offsetting must be used, and nor will the amount offset contribute to the SBTi reductions. Rather, they are considered to be an option for companies wanting to finance additional emission reductions beyond their science-based target (SBT) or net-zero target.

Two acknowledged carbon offset providers and certifiers are the Gold Standard, and Vera (VCS). BG could ask staff which of the approved offsetting schemes they think would be best to contribute toward, to offset any remaining scope 1, 2 or 3 emissions. .

Gold Standard®
Climate Security & Sustainable Development

Verified Carbon Standard

Local Carbon Offset Alternatives

Even the most reputable certified offset organisations can be linked with greenwashing.. This is because the offset programmes often take place in remote locations and exact CO2 reductions are difficult to quantify. In the past, this has led to news headlines stating that some offset programmes are 'worthless'.

Which offset route (if any) BG go down is an internal decision, but local renewable community schemes in proximity to BG's base(s) of operation could be considered. For example, the South East London Community Energy initiative is a good example of a charity organisation that BG could provide funding to, and SELCE would in turn, develop community renewable energy projects in the areas around Greenwich.

Community Energy Birmingham offers similar opportunities for BG to contribute to projects to offset the Birmingham Office Emissions.

Alternatively, other non-profit organisations focused around adaptation and prevention of impacts of climate change, such as Shade the UK (founded by Andy Love) or Power Up North London, could represent good opportunities to bolster BG's ESG and CSR requirements.

Certification Options

To encourage sustainable operation of BG, as well as focusing on reducing total GHG emissions, Baily Garner should investigate the feasibility of applying for certifications that encompass holistic sustainability within an organisation. Some examples of these are illustrated to the right.

The professional body for HR and people development

The CIPD have set out a guidance document providing advice on how organisations can plan and manage a move to hybrid working

Measuring a company's entire social and environmental impact

Certification is a designation that a business is meeting high standards of verified performance, accountability, and transparency on factors from employee benefits and charitable giving to supply chain practices and input materials.

Cycle to work scheme

Cyclescheme is an employee benefit that saves you 25-39% on a bike and accessories.

You pay nothing upfront and the payments are taken tax efficiently from your salary by your employer.

Perks for choosing sustainable transport

Paid 'journey days' to staff who choose low-carbon holiday travel (although emissions are not accounted for in Scope 3).

Future Scenarios: Business-as-usual

A ‘business-as-usual’ scenario was modelled, where Baily Garner continues with operations as they are currently, and the resulting emissions were calculated. Future emissions were estimated accounting for company growth and grid decarbonisation, where relevant.

While Scope 2 emissions will decrease over time in line with decarbonisation (assuming that employee electricity usage change is minimal), Scope 1 and 3 emissions would likely rise. This is a direct result of increased use of company-owned vehicles (Scope 1) and more purchased goods, more employees commuting and more wastage (Scope 3), for example. Total emissions would be expected to increase, as a result.

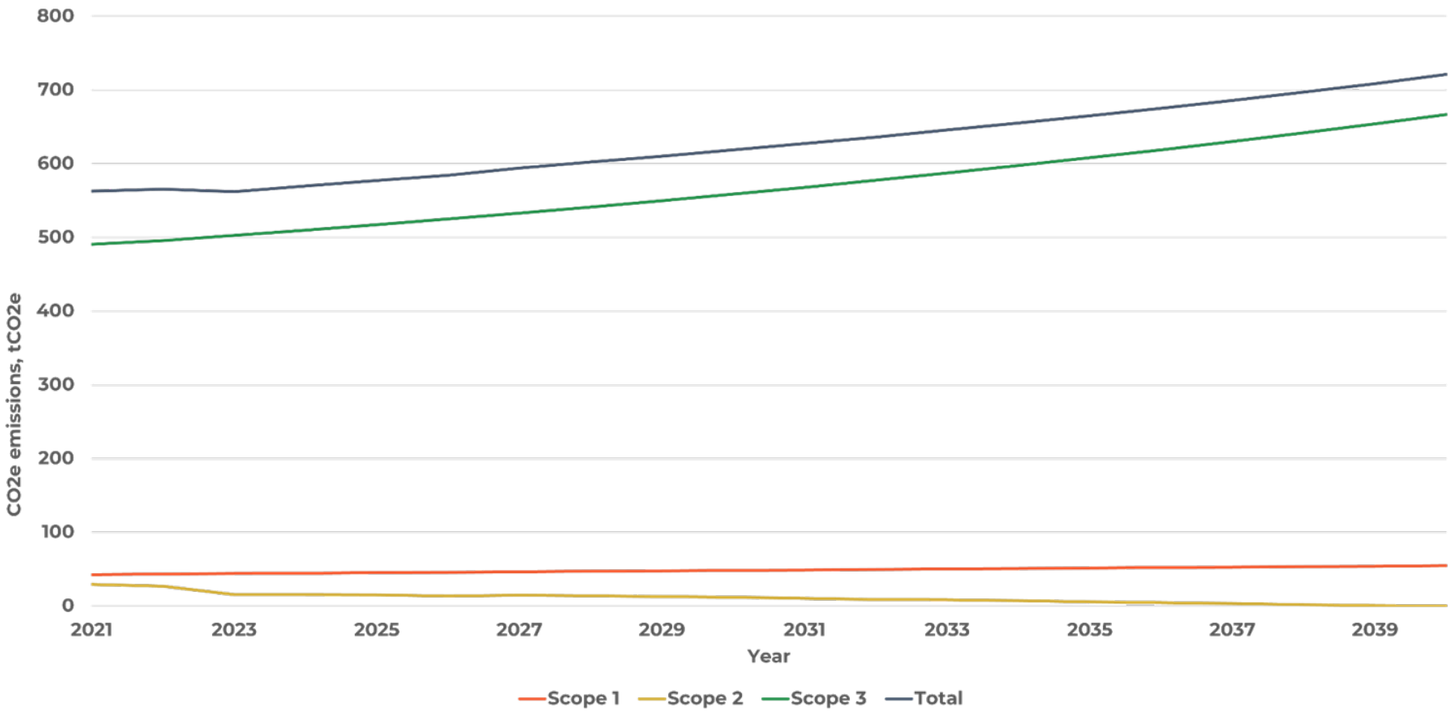


Figure 11: Business-as-usual scenario for Baily Garner.

Future Scenarios: Grid decarbonisation

Over time, the UK energy sector will move away from carbon-intensive sources, such as coal and gas, towards renewables and other sources with less associated emissions. This process is called decarbonisation. The BEIS have made energy and emissions projections (EEP) for the UK, investigating how the carbon intensity of grid electricity is likely to change as a result of this shift.

Decarbonisation is an important consideration when creating future scenario projections, as it heavily impacts scope 2 emissions. It means that the electricity used by Baily Garner for office operations will have a lower emissions tag by default.

Past and future emissions intensity data was obtained from Future Energy Scenarios (2022), based on a business-as-usual ('Falling Short') scenario. This document lays out historical and future data regarding UK energy usage, including carbon intensity.Projections are based on four scenarios. The figure on the right demonstrates how decarbonisation will occur in line with the 'Falling Short' scenario, which reflects a 'minimal behaviour change' and slow grid decarbonisation. This data was used for all projections concerning Baily Garner's future electricity usage.

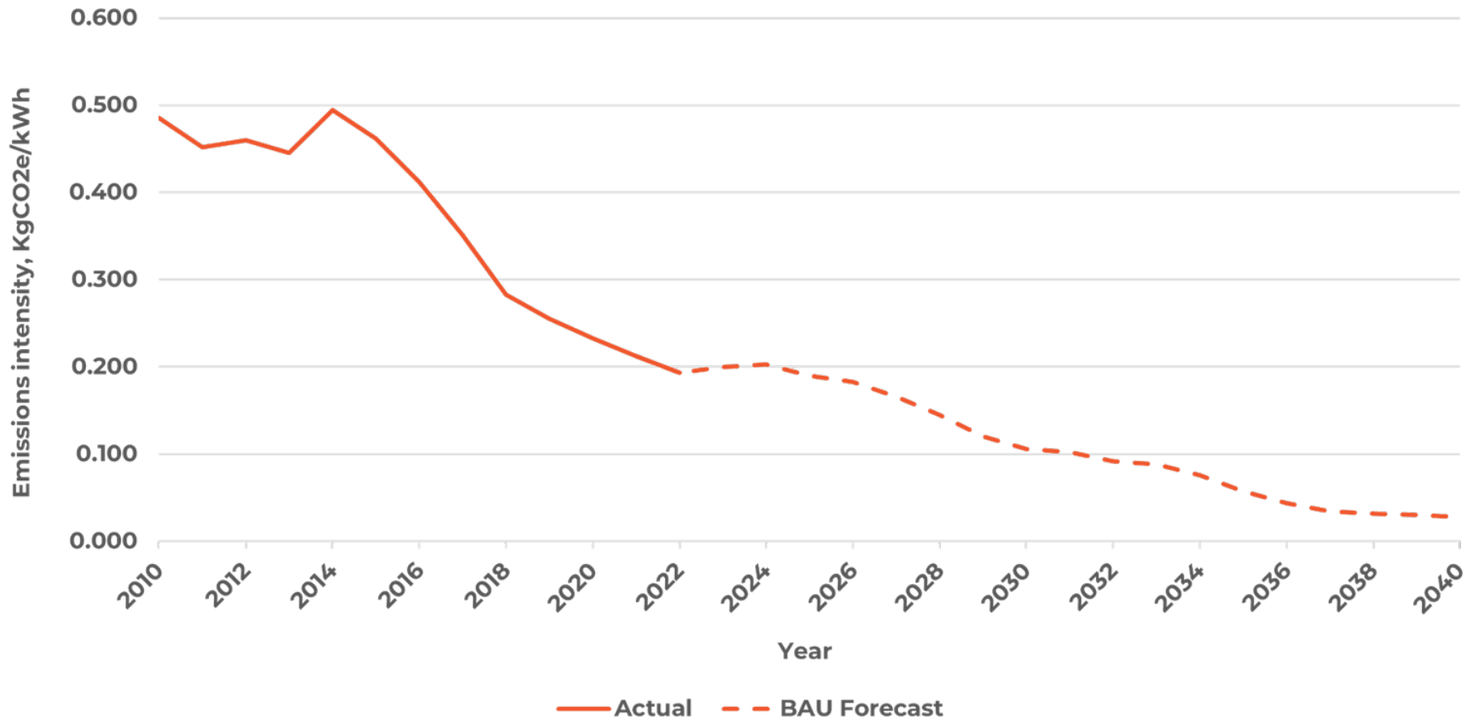


Figure 12: Grid decarbonisation figures. Data from FES (2022 report).

Future Scenarios: Baily Garner

Forecasting changing carbon emissions alongside company growth is an important part of setting effective Science-Based Targets and establishing an effective emissions reduction plan. The number of employees at a company is linked with the total emissions across scopes 1, 2 and 3.

In order to predict how emissions might change in the future, it was important to understand how the company size might change. Based on prior activity, we estimate that Baily Garner will continue to grow at a rate of about 8 employees per year. Growing numbers of employees will increase emissions across scopes 1, 2 and 3, including emissions from employee travel (both business travel and commuting) and office waste.

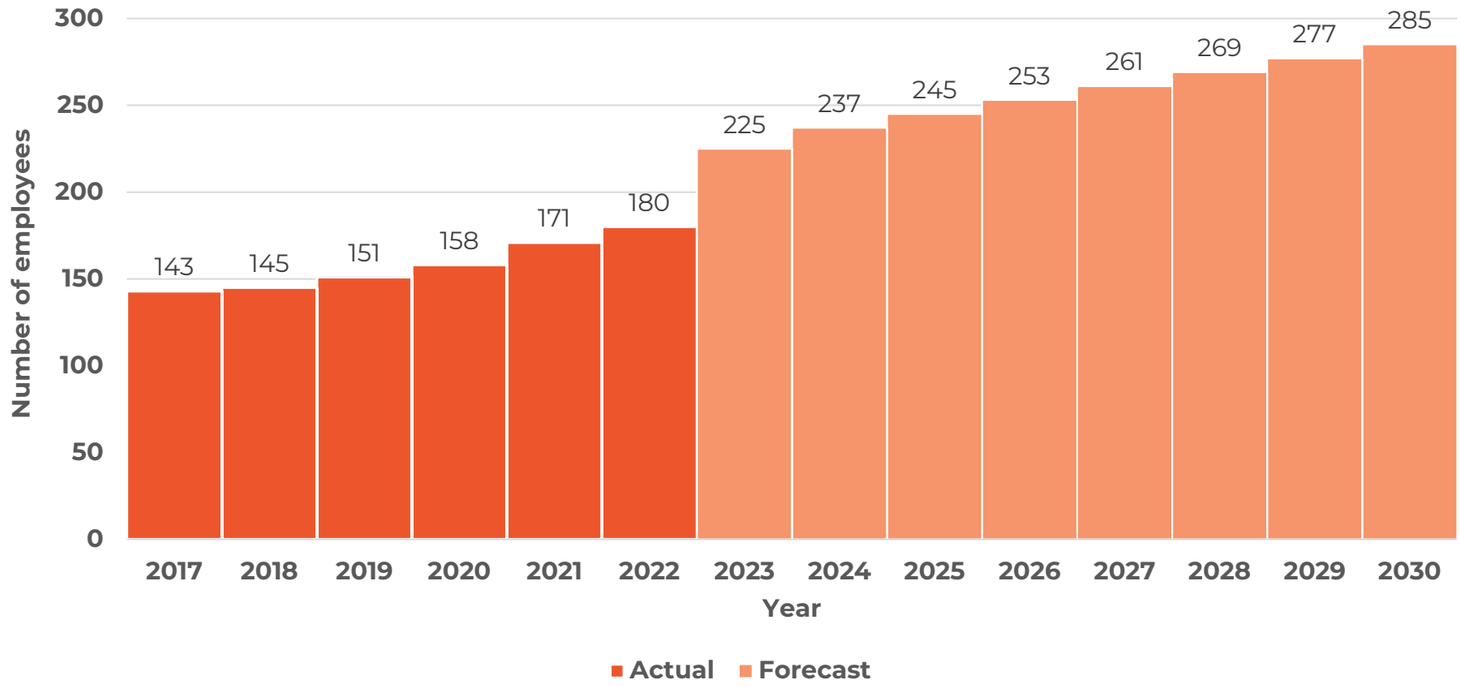


Figure 13: Projections for BG company growth.

Conclusion

Scope 1: Reduction Opportunities

Scope 1 emissions can be reduced through two key strategies. The first of which relies on BG investigating further retrofit measures to their office buildings and the second relies on BG phasing out fossil-fuel company cars and making the switch to an electric fleet over time and a focus on sustainable public transport.

Scope 1 presents an opportunity to reduce emissions to **net zero by 2030** through the implementation of an office retrofit strategy and phasing out of fossil fuel vehicles.

Scope 2: Reduction Opportunities

Following swapping over from fossil fuel building services and vehicles, BG should investigate the feasibility of renewable energy tariffs to find a tariff that is both financially viable, and provides BG with an energy mix that aligns with the CO2 reduction goals. There is an opportunity to carry out a more intensive audit of the building emissions associated with the three office spaces including CIBSE TM54 analysis.

Based on the proposed scenario of switching all offices to electric systems, and using electric vehicles it is anticipated that initially BG's scope 2 emissions will increase as a result of the increased electricity usage, before decreasing viia the use of on-site renewables and a renewable energy tariff to a settled figure of approximately **20 tCO2e** per annum. Further reduction measures could be investigated to reduce this scope.

Scope 3: Reduction Opportunities

Scope 3 Emissions are typically harder to monitor and reduce. BG should investigate the supply chains of their Purchased Goods and Services to seek lower carbon alternatives and work with companies that are also on the road to net zero carbon. Another key focus area should be the introduction of travel plans and updated office facilities to encourage staff to use more public transport and active travel to commute to work, spending time on maximising the opportunities for hybrid working.

More immediate ways to curb scope 3 emissions include switching to green investments and less carbon-intensive cloud service plans

Scope 3 presents an opportunity to reduce emissions to **60 tCO2e by 2040**, as a conservative estimate.

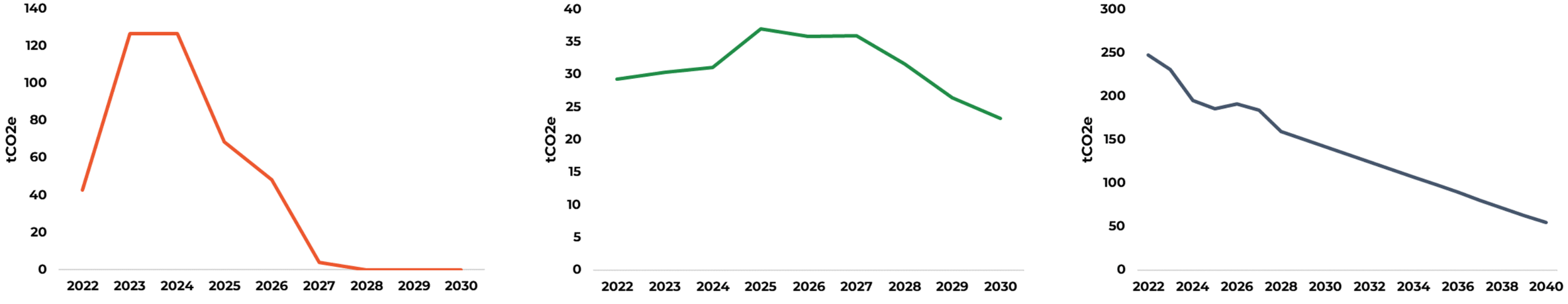


Figure 15:. Emissions summary graphs for reductions strategy applied to scope 1 (left), scope 2 (middle) and scope 3 (right).

Section Six

6 Appendices

Appendix A: Definitions and Bibliography

Definitions

Setting definitions is an important when working with greenhouse gases and carbon reduction plans as there are several key policy documents, each with slightly different definitions.

For the purpose of this report, the following definitions will be used:

Net Zero GHG: Human caused residual GHG emissions are balanced by human led removals over a specified period and within specified boundaries. (ISO IWA 42:2022 (E))

Renewable energy: Energy collected from resources that are naturally replenished at a rate equal or faster than extracted or used. (ISO IWA 42:2022 (E))

Base Year: A historic datum (a specific year on average over multiple years) against which a company's emissions are tracked over time - in this instance the base year is set as October 2021 - October 2022. (GHG Protocol Corporate Standard)

CO2 Equivalent (CO2e): The universal unit of measurement to indicate the global warming potential (GWP) of each of the six green houses gases, expressed in terms of the GWP of one unit of carbon dioxide. It is used to evaluate releasing (or avoiding releasing) different greenhouse gases against a common basis. (GHG Protocol Corporate Standard)

Scope 1 Emissions: A reporting organisation's direct GHG emissions. (GHG Protocol Corporate Standard)

Scope 2 Emissions: A reporting organisation's emissions associated with the generation of electricity, heating / cooling or steam purchased for own consumption. (GHG Protocol Corporate Standard)

Scope 3 Emissions: A reporting organisation's indirect emissions other than those covered in scope 2. (GHG Protocol Corporate Standard)

Greenhouse Gas (GHG): A greenhouse gas (GHG or GhG) is a gas that absorbs and emits radiant energy within the thermal infrared range, causing the greenhouse effect.[1] The primary greenhouse gases in Earth's atmosphere are water vapor (H2O), carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), and ozone (O3).

Global Warming Potential: A factor describing the radiative forcing impact (degree of harm to the atmosphere) of one unit of a given GHG relative to one unit of CO2. See table 1 below for a list of GWP values. (GHG Protocol Corporate Standard)

Emission reduction: Quantified decrease in greenhouse gas emissions specifically related to or arising from an activity between two points in time or relative to a baseline.

Carbon Offsetting: Carbon offset schemes allow individuals and companies to invest in environmental projects around the world in order to balance out their own carbon footprints.

Carbon Insetting: are interventions along a company's value chain that are designed to generate GHG emissions reductions and carbon storage, and at the same time create positive impacts for communities, landscapes and ecosystems.

Net Zero vs Carbon Neutral: The term carbon neutral refers to an activity or a company which offsets the same amount of carbon or greenhouse gases that they emit. Carbon neutrality is defined by an internationally-recognised standard – PAS 2060. Net zero means reducing all greenhouse gas emissions as much as humanly possible, and offsetting only the essential emissions that remain. Net zero ghg emissions is designed to keep us on track for a global temperature rise of less than 1.5°C

Table 1: GWP values of the GHGs included within the GHG Protocol Corporate Accounting and Reporting Standard

Greenhouse Gas (GHG)	Global Warming Potential (GWP) (100 Year)
Carbon Dioxide (CO2)	**1**
Methane (CH4)	**28**
Hydroflurocarbons (HFCs)	**4 - 12,400 *(subject to HFC type)***
Perflurocarbons (PCFs)	**6,630 - 23,500 *(subject to PCF type)***
Sulphur Hexafluoride (SF6)	**23,500**
Nitrogen Trifluoride (NF3)	**16,100**

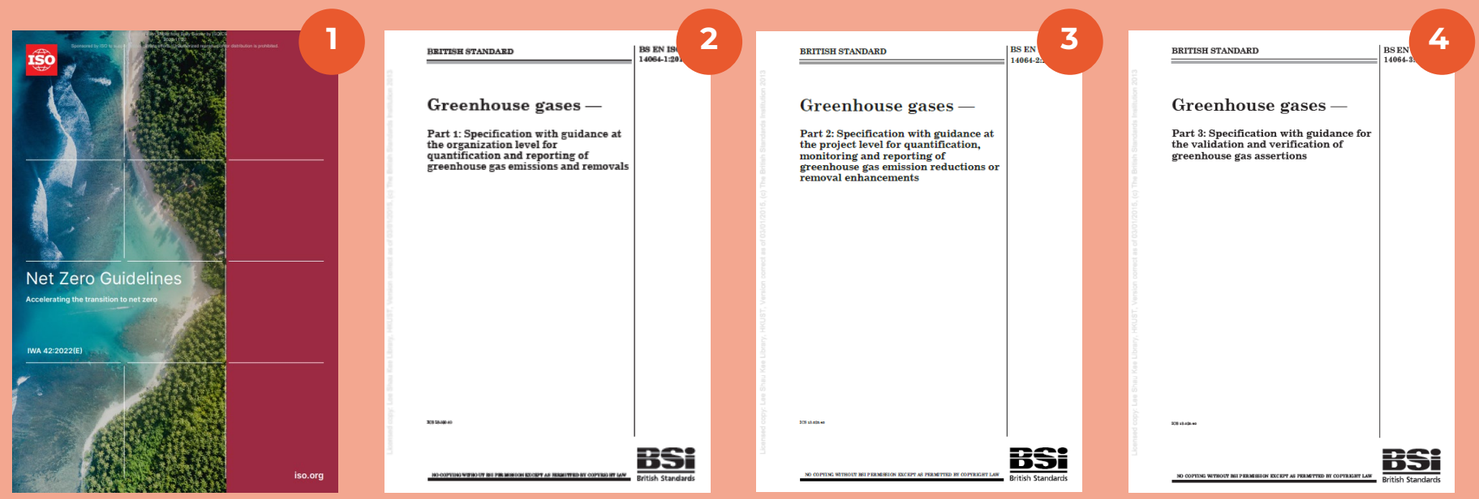
Bibliography

The following documents were consulted and utilised during the process of calculating Baily Garner's Scope 1, 2 and 3 emissions:

1. **ISO -** Net Zero Guidelines: Accelerating the transition to net zero **IWA 42: 2022 (E)**
2. **ISO -** Greenhouse Gases (Part 1): Specification with guidance at the organisational level for the quantification and reporting of greenhouse gas emissions and removals **BS EN ISO 14064-1**
3. **ISO -** Greenhouse Gases (Part 2): Specification with guidance for the project level quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements BS **EN ISO 14064-2**
4. **ISO** - Greenhouse gases (Part 3): Specification with guidance for the validation and verification of greenhouse gas assertions **BS EN ISO 14064-3**
5. **WRI -** The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard.
6. **WRI -** The Greenhouse Gas Protocol: The GHG protocol for Project Accounting
7. **WRI -** Greenhouse Gas Protocol Scope 2 Guidance: An amendment to the GHG Protocol Corporate Standard
8. **WRI:** Greenhouse Gas Protocol Technical Guidance for Calculating Scope 3 Emissions: Supplement to the Corporate Value Chain (Scope 3) Accounting & Reporting Standard.

The above does not represent any form of hierarchy.

The ISO Family



GHG Protocol Guides

Appendix B: Energy Modelling Assumptions

Energy Modelling Assumptions

	Queenscroft	146-148 Eltham Hill	55 Charlotte Street
Fabric Assumptions			
External wall U-value	1.5	1.5	1.6
Ground floor U-value	0.7	1.4	0.7
Roof U-value	1.2	0.3	0.3
Window U-value	4.7	2.9	2.9
Air Permeability (m3/(h.m2) @50 Pa)	25	25	15
System Assumptions			
Lighting efficacy	50 Lm/W		
Space heating type	Gas boiler		
Space heating efficiency	81%	81%	81%

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