



Low Carbon Alliance

Carbon Reduction Plan



Section 1 Introduction

Low Carbon Alliance Limited (LCA) are creating a carbon reduction plan to assist the business in reducing carbon emissions associated with our operational activities. This plan therefore does not include any emissions associated with LCA projects or developments: these are reported and managed on an individual project basis.

This carbon plan is the first draft and will look to address Scope 1 and 2 carbon emissions and set out ideas to develop a Scope 3 emissions reduction plan. The emissions scopes, also known as Green House Gas (GHG) emissions are described in Section 3.

Any carbon reduction plan will be a working document, as operational emissions change as the organisation evolves its practices.

Section 2 General

All information contained in this report is to be treated as guidance only and this includes information from building owners and product manufacturers. Any investment decisions should be subject to further detailed modelling reflecting final design and costs. Information contained within this report in respect to physical building attributes and services is based on a visual appraisal only. This information is not to be used by others as a means of assessment for any reason.

Section 3 Executive Summary

This is a first draft of a carbon reduction plan for LCA. The targets are not yet set as there is no data to begin establishing a baseline where targets can be built from. Reductions can still be developed, and policies created ahead of data collection. The following salient points have been identified:

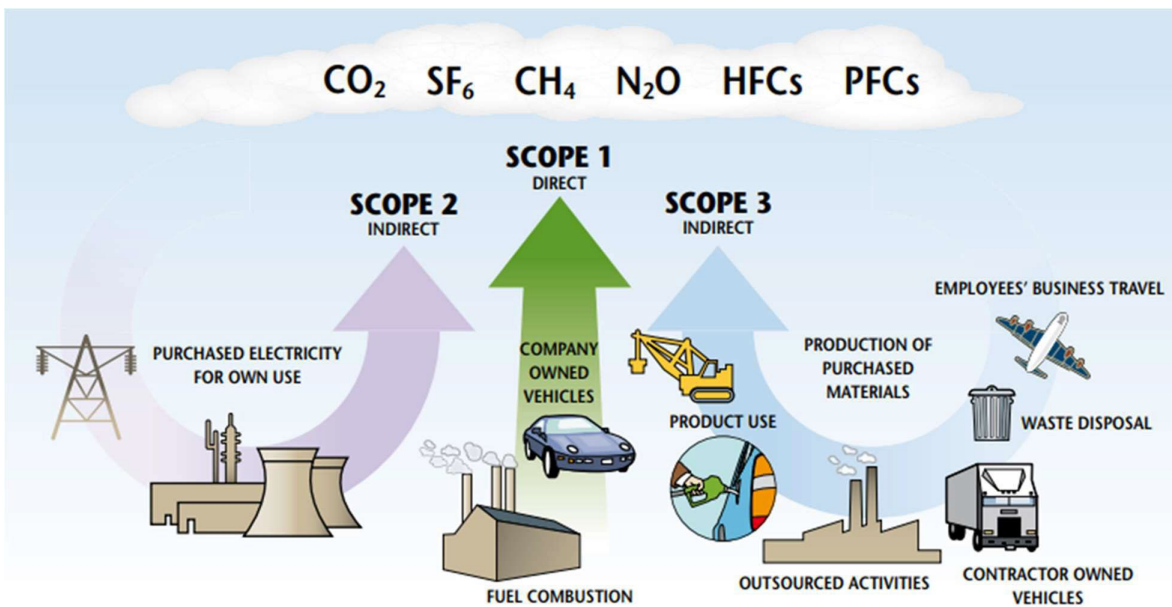
- An energy/carbon data source and collection system is required
- LCA do not have any known Scope 1 GHG emissions
- LCA can reduce Scope 2 GHG emissions by adopting energy reduction ideas detailed in this report but the majority of energy use lies outside the company's direct control
- LCA require a Scope 3 identification exercise
- LCA can design internal policies to reduce Scope 3 however, this needs to be a collaborative process across management and employees

Section 4 Reporting GHG Emissions

GHG emissions are separated into reporting scopes as listed below. These scopes are globally recognised and adopted by governments with GHG reporting policies. The BEIS currently issues guidance to UK companies on reporting methods and the use of carbon conversion factors.

- Scope 1 – Direct emissions
- Scope 2 – Indirect emissions
- Scope 3 – Value chain emissions

The following illustration helps expand on the definitions.



As mentioned in the introduction, this first draft carbon plan will focus on Scopes 1 and 2 with further development required for Scope 3.



Section 5 Carbon Reduction Targets and Energy Baseline

The overall target for LCA is to meet the legally binding UK Government target of Net Zero by 2050. However, this position will be dependent on the definition of Net Zero. For the purposes of this initial plan, the definition will be as published by the UK Green Building Council (UKGBC) and defined as follows:

“When the amount of carbon emissions associated with the building’s operational energy on an annual basis is zero or negative”

There are definitions for new construction that will apply to LCA’s projects however, these are addressed outside of this plan.

Whilst LCA’s overall carbon emissions include activities outside of the buildings they occupy, most emissions are generated by the activity of occupying office buildings. As LCA’s office is a serviced tenant space with electricity and gas usage inclusive of the tenancy agreement, LCA has not provided consumption data.

The LCA office at 4th Floor, Hamilton House, London WC1H 9BD uses both gas and electricity. UKGBC encourage reducing energy first and then offsetting any remaining carbon emissions. The UKGBC have published the ‘Net Zero Carbon Buildings: A Framework Definition,’ which sets a reduction target of 60% for offices by 2050.

It is LCA’s ambition to achieve this 60% reduction by 2030 based on a ‘normalised baseline’ of energy consumption. As LCA have relocated offices during early 2022 and only recently established 12-months of energy consumption, there is an absence of normalised baseline data. The relocation has increased the volume of space that LCA occupies and in turn the quantity of normalised energy consumption associated with it.

The new baseline is challenging to set as there has yet to be a fully established ‘norm’ with the early evolution of hybrid working. However, as the carbon reduction plan is an evolving document, a baseline should be set regardless of the vagaries that exist.

The following baseline and energy reduction targets are based on the estimated energy consumption of 4th Floor, Hamilton House, London, WC1H 9BD during 2022/2023. The data for the regional offices will be added later as these are cleansed and verified.



Baseline Year: 2023	
Additional Details relating to the Baseline Emissions calculations.	
<i>As LCA occupied new premises the baseline year has been set as the first full year in occupation. As working practices are still evolving as employees/employers agree on working from home the baseline will need to be revisited once occupation is deemed 'normalised'.</i>	
Baseline year emissions:	
EMISSIONS	TOTAL (tCO ₂ e)
Scope 1	0
Scope 2	2.43 tCO ₂
Scope 3 (Included Sources)	Unknown
Total Emissions	2.43 tCO ₂

Current Emissions Reporting

Reporting Year: 2023	
EMISSIONS	TOTAL (tCO ₂ e)
Scope 1	0
Scope 2	2.43 tCO ₂
Scope 3 (Included Sources)	Unknown
Total Emissions	2.43 tCO ₂

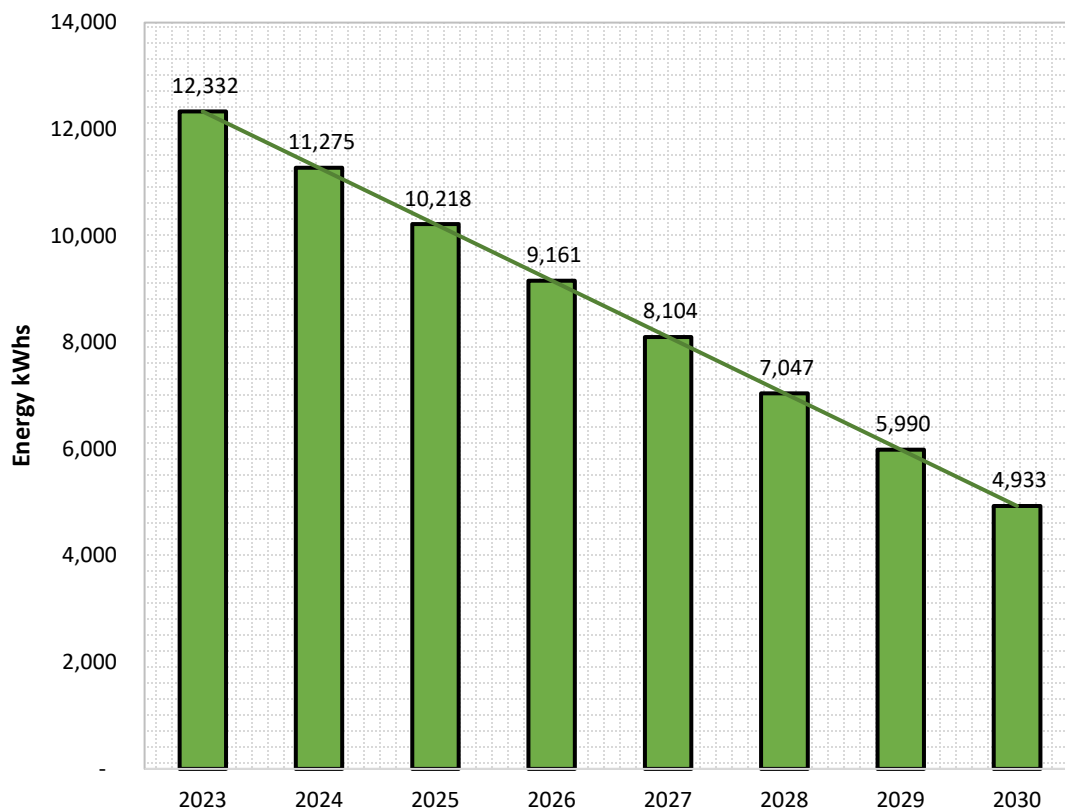


TARGET ENERGY USE BY 2030

- Hamilton House – 40,000 kWhs per annum
- SCOPE 1 and 2 EMISSIONS PER ANNUM
Hamilton House - 9,406kg
- CO₂ SCOPE 3 EMISSIONS p.a.
- 4th Floor, Hamilton House - Unknown

In order to continue our progress to achieving Net Zero, we have adopted the following carbon reduction targets. To achieve the reduction in energy and carbon emissions of 60% by 2030, Kajima will target an average annual energy consumption reduction of 7,500kWh's.

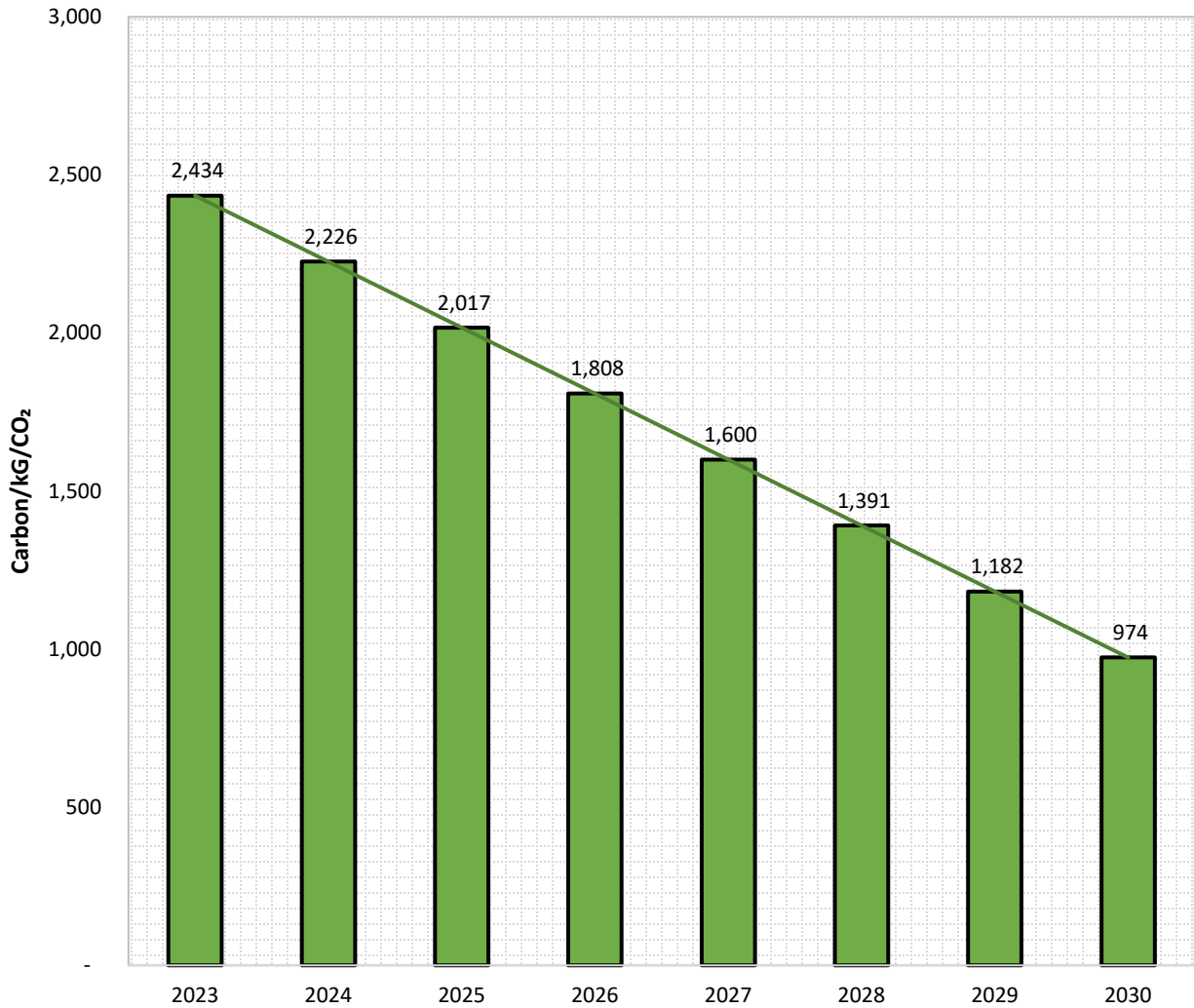
Net Zero Energy Projection





Whilst carbon emissions factors will change and reduce carbon associated with grid supplied electricity (Scope 2) there will be a fixed focus on the energy reduction as opposed to adjusting targets based on carbon measurement.

Scope 1 and 2 Emissions Trajectory





Section 6 Energy Benchmark

Using estimated energy use and the floor area of the office (60m²), we have calculated the normalised energy intensity (annual energy use per unit floor area) for heating and electricity use. We have shown these values in comparison to the Chartered Institution of Building Services Engineers (CIBSE) Guide F “Energy Efficiency in Buildings” benchmarks for similar office spaces.

For air-conditioned, standard specification office spaces built and operated to a typical practice, the CIBSE benchmarks are 178 kWh/m² for heating and 226kWh/m² for electricity.

CIBSE Type	Building	kWh Usage per m ²			
Air-Conditioned Standard		Good Practice		Typical Practice	
		Fossil Fuels	Electricity	Fossil Fuels	Electricity
		97	128	178	226

CIBSE Good Practice and Typical Practice Benchmark

The table below shows the energy intensity of LCA’s office and the percentage difference to the CIBSE ‘Typical Practice’ and ‘Good Practice’ benchmarks. Where electricity is used for heating/cooling the benchmark energy use for gas is simply added to the electricity and divided by the heating/cooling systems seasonal performance.

Air-Conditioned Offices	kWh Usage per m ²		
	4th Floor, Hamilton House	Difference to CIBSE Typical Practice	Difference to CIBSE Good Practice
Gas	93	52%	96%
Electricity	112	49%	88%

LCA average Fossil Fuel and Electricity Benchmark, air-conditioned offices

The benchmark shows that the offices are slightly better than ‘Good Practice’ levels of energy use on the assumed aggregation of energy supplies. However, further improvement can be made.



Section 7 Reducing Scope 1 and 2 GHG Emissions

In this section of the report, we identify potential energy and carbon-saving measures for LCA's office at 4th Floor, Hamilton House, London.

Scope 1:

Scope 1 includes all GHG emitted directly from buildings such as boiler chimneys. It also includes GHG emissions from company-owned vehicles.

LCA do not own any company vehicles. The shared office in London does not have a boiler; hence LCA do not have any GHG emissions to be reported in Scope 1. It is worth noting that carbon emissions from company-owned vehicles are often the highest component of Scope 1 reporting.

Scope 2:

Scope 2 is associated with carbon emitted to import electricity to the London office. The carbon associated with grid-supplied electricity is accounted for in the BEIS guidance and has a carbon conversion factor applied for every unit of power (kWh) consumed. Grid-supplied power can achieve near zero emissions status if the power is sourced from a renewable generator such as a solar farm or wind farm. Whilst the actual electrons transmitted from remote renewable plants will not be consumed in the building, they are assigned to the building through a Corporate Power Purchase Agreement (CPPA).

Outside of any available CPPA, the amount of electricity (kWhs) can be reduced as part of the carbon reduction plan.

Section 8 Interventions

Following a survey of the London office several energy reduction opportunities have been identified. In general, the London office has only been recently completed so enjoys efficient systems due to compliance with Building regulations Part L, Conservation of Fuel & Power.

However, opportunities do exist as follows.

Ventilation

On the survey day the ventilation system was not operating due to an issue with a chiller. To compensate the windows were open for natural ventilation and this temporary adaptation was able to keep reasonable temperatures by natural ventilation alone in hot weather. This could be further investigated as a potential mode of operation once consideration is given to all aspects of the ventilation requirements and wellbeing of the staff, from an air quality and noise perspective. It could be recommended that for summer times bringing mechanical ventilation on manually when temperatures exceed beyond a predetermined temperature.



All meeting rooms are mechanically ventilated and adjusted locally by a digital display control panel; it allows for manual adjustment of fan speed and temperature. It is worth pointing out that the menu features are easily accessible for a wide range of fan speed adjustment, and this could be further limited within a narrower range.

Lighting

The office has CFL lighting with manual controls. These can be changed to LED panels and fitted with daylight sensors.

Behavioral Awareness/Change

Employee behavioral change at has the potential to increase productivity and deliver energy cost savings.

The following energy saving recommendations are typically low and no cost solutions and may save up to 5% of total electricity consumption at each of the four properties:

- Switching off equipment and lights when not in use will have a major impact. Equipment on standby still uses energy and all appliances should be fully turned off when they are not being used.
- Equipment left on standby, or lighting left on when not needed inputs heat into the offices. Turning off equipment and lighting will reduce the amount of heat radiated into the office and increase thermal comfort.
- Check space heating controls and temperature set-points regularly. To avoid fluctuations in temperature it is important to agree a set-point that is comfortable for most occupants and prevent changes by employees on a regular basis. This may mean preventing access to the local controllers by unauthorised employees.
- Use timer plugs on appliances that have a regular operating schedule, such as printers and scanners.
- Applying stickers on manually operated light switches to encourage staff to turn lights off when leaving a room.
- Targets and incentives give people something to aim for. The creation energy reductions targets, that if met will lead to rewards for employees through pay benefits, or team building activities will help to incentivise employees.
- Appointing Carbon Champions to monitor these targets and for each floor and or department may encourage competition between employees to deliver the largest savings.



IT Equipment

- Computer and IT equipment such as printers and IP phones can often be left on overnight. Therefore, if technically feasible it is recommended that all network connected devices are automatically shut down through the central IT network. For safety purposes the IT network will only engage shut down of PC's provided the PCs are not being used by employees or if there is a program, software package or simulation left running.
- Remote and automatic shutting down of IT equipment at night and out of hours can decrease electricity use by approximately 5% for each property.



Section 9 Measuring and Evaluation on Reduction of GHG Emissions

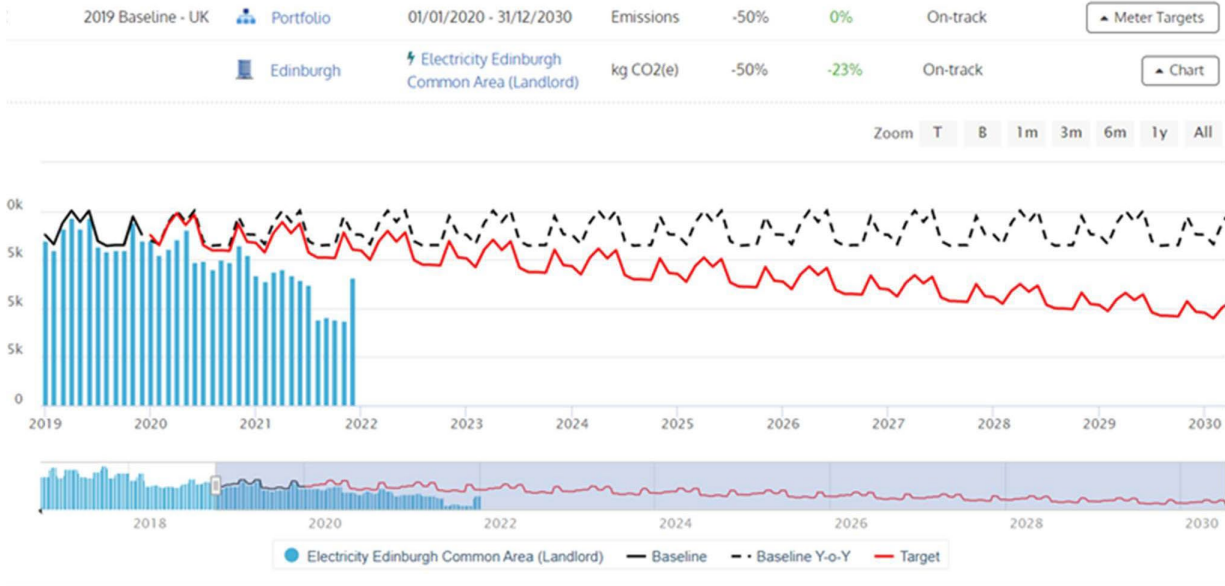
The success of the carbon plan can only be verified through measurement of energy and carbon data. Currently LCA do not have access to energy consumption data from the property owner, due to energy being part of the service charge.

- The energy data should be granular and measured in energy units i.e., kWh's. LCA will need to request the kWh data from the property owner. In the event this information is unobtainable due to lack of metering then we may install our own (non-intrusive) metering solution.

Whilst data can be collated and managed it needs to be verified to clearly demonstrate the success of the plan. Intelligent data management platforms will use data bases for weather to understand how energy consumption changes from year to year. These weather databases create 'Heating Degree Days' (HDD) and 'Cooling Degree Days' (CDD) which are a measure of how many hours heating and cooling plant need to operate.

Data platforms will also perform analysis and automatically assign fuels to their respective GHG scope classification. Once annual readings are verified and HDD/CDD are proportionately applied, the actual reduction in carbon can be verified.

The first image below is an indicative chart of a live carbon reduction plan. The chart shows carbon associated with imported electricity (scope 2 GHG) for a building over a 10-year period. The black dotted line from L to R is the 'Do Nothing' position and the red line L to R is the projected carbon reduction.



All three GHG scopes can be visualised on a year-by-year comparison as shown in the next image.





Section 10 Scope 3 GHG Emissions

As mentioned earlier in this plan the scope 3 emissions are typically the more challenging. The challenge is two-fold:

1. How to measure Scope 3
2. How to reduce and verify Scope 3 reductions

Scope 3 is commonly referred to the value chain emissions. Whilst LCA do not directly create our scope 3 GHG emissions we are responsible, in part, for their production.

- Measurement of these can be difficult as the identification of carbon in the manufacturing of products, and their complete journey from origin to LCA may not be easily accessible. Some large organisations may provide GHG values on a product/unit basis but not on the transport. However, even these values may not include GHG associated with production of raw materials, nor will their countries of origin have grid carbon conversion factors.

In time we expect UK Government to design reporting guidance for UK based organisations to help measure Scope 3 emissions.

However, LCA can still plan to reduce Scope 3 by designing policies to reduce Scope 3, particularly around transportation. Any policy that helps source operational services/products from more local sources, whilst reducing need and complexity will reduce carbon.

Section 11 Scope 3 Reduction Strategy

The first stage of the reduction strategy for Scope 3 is to identify everything within LCA's operations that is deemed Scope 3. The following is a list of potential activities however, this needs to be collated further.

- Heat imported from the landlord
- Office furniture and electronic equipment
- Replacement lamps for light fittings
- Stationary
- Business cards
- Consumables such as toilet and kitchen products
- PPE and any other staff issued clothing
- Printing
- Waste management
- Third party or public transport
- Data storage
- Refrigerant gas type in AC system
- SPV's, JV's, land investments etc



Once information is collated it is possible to design policies to begin reducing these. It is important to note that LCA's Scope 3 is typically another's Scope 1 or 2, however a reduction in Scope 3 can bring about the total GHG reductions that are needed to achieve Net Zero by 2050.

Policies to reduce Scope 3

- Ethical stationary – recycled materials and carbon free manufacturing
- Ban on single use plastics
- Paperless office
- Ethical PPE
- Water consumption reduction
- Ethical hotel – booking hotels with Low or Zero carbon credentials
- Recycling tools/resources
- Identification of product origins and whether local options exist
- Ethical consumables
- Travel by train instead of car/plane for business travel
- Employees encouraged to travel by train or cycle into the office (cycle to work scheme adoption) instead of cars

LCA = Small business (less than 50 people and below 10 million in turnover)

<https://www.utilitybidder.co.uk/compare-business-energy/what-is-average-business-energy-consumption/#:~:text=The%20average%20electricity%20usage%20is,and%20handle%20your%20supply%20differently.>
<https://bionic.co.uk/business-energy/guides/average-energy-usage-for-businesses/>

small business consumption figure:

- Gas – 15,000 - 30,000kWh
- Elec – 15,000 – 25,000kWh

<https://find-energy-certificate.service.gov.uk/energy-certificate/2992-4918-8172-3466-8207>

Office EPC – D rating