FUTURE LEAP

### Carbon Impact and Reduction Report

### **BBA** Architects

January 2023 – December 2023



# Executive Summary

BBA Architects are a small architectural and planning firm in Bath. The following report has been compiled by Future Leap to determine the carbon impact of their activities and provide recommendations to promote decarbonisation.

A fully comprehensive carbon footprint has been calculated for the timeframe **January 2023 – December 2023**, covering gas consumption; electricity use; fuel and energy related activities; purchased goods and services; waste and water; business travel and employee commute. BBA Architects' total emissions have been measured at **51.65 tCO<sub>2</sub>e**.

- Scope 1: 2.71 tCO<sub>2</sub>e (5%)
- Scope 2: **1.33 tCO<sub>2</sub>e** (3%)
- Scope 3: **47.60 tCO<sub>2</sub>e** (92%)

Reduction opportunities have been identified relating to BBA Architects' building, travel, waste and supply chain. Alongside data tracking, supply chain engagement and influencing staff behaviours some key reduction actions include:

- Engaging with landlord to determine feasibility of solar PV , electrification of heating and upgrades to building fabric
- Feasibility of **zonal/smart heating controls**
- Investment in company-owned EVs

A net zero pathway has also been established providing both near-term and long-term targets.

- Near term: **50% reduction** in Scope 1 and 2 emissions by **2030**
- Long-term: net zero (90% reduction) in all emissions by 2050





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### P Introduction

Recent reports from the Intergovernmental Panel on Climate Change (IPCC) highlight the unequivocal effect of human activities on climate change. Limiting global warming to below a 1.5°C increase, requires collective action across all sectors and industry to reduce global greenhouse gas emissions.

Net zero is internationally recognised as the most suitable approach to preventing run-away climate change and its associated impacts. To reach net zero, the Science Based Targets Initiative (SBTi) requires organisations to reduce all associated emissions by at least 90%, no later than 2050. Residual emissions can then be balanced through investment in permanent carbon removal schemes.

The UK government have committed to a net zero by 2050 target in law. Actions to mitigate greenhouse gas emissions within active companies operating in the UK will be vital in achieving this target and shaping the UK's response to climate change.

A carbon footprint is a quantification of the greenhouse gases emitted as a result of organisational activities. All greenhouse gases are represented relatively, in the form of carbon dioxide equivalent (CO<sub>2</sub>e). For organisations to align with net zero, regular measurement of emissions should be undertaken to allow progress to be tracked.

The benefits of reducing emissions and aligning organisational growth with net zero go beyond the much-discussed climate emergency. It allows for increased energy efficiency and reduced operational costs. Having a net zero plan and setting sciencebased targets has proven to increase organisational resilience, engage stakeholders, including prospective investors and customers, as well as increasing employee retention.





# BBA Architects

BBA Architects are an architectural and planning firm based in Bath. They employee 15 staff members, operating in the South-West. BBA Architects design and deliver work for both the private and public sectors.

To advance their sustainability credentials, BBA Architects contacted Future Leap to undertake a carbon impact assessment. Alongside this, a carbon reduction plan has also been generated, promoting decarbonisation in line with net zero 2050 ambition.













### Section 1: Impact

- Reporting Standards
- Data Inclusion
- Carbon Footprint
- Operational Breakdown



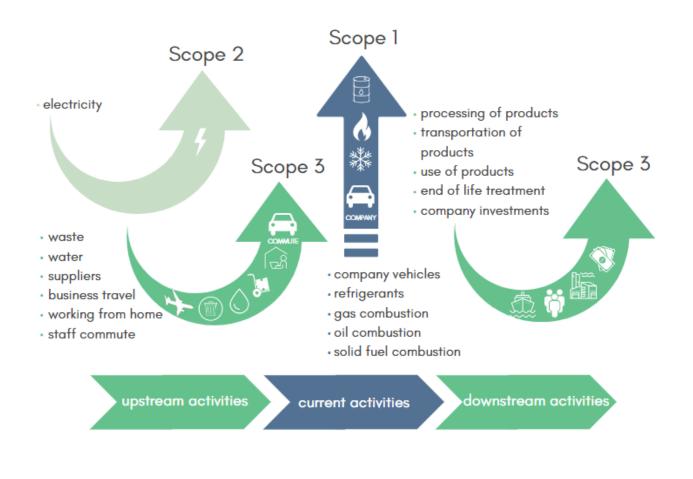


### P Reporting Standards

Emission calculations follow the methodology outlined in the Greenhouse Gas Protocol's Accounting and Reporting Standard. Under the Greenhouse Gas Protocol, emission sources are divided into scopes:

- Scope 1: direct emissions released by the reporting organisation
- Scope 2: emissions from electricity purchases
- Scope 3: indirect emissions and those associated with supply chain and product use

Government published conversion factors have been used to represent the impact of organisational activities.







# Data Inclusion

Data has been collected for the 12-month period, January 2023 – December 2023. A raw data table can be found in Appendix 1, with a methodological outline and any assumptions found in Appendix 2. An operational control approach has been used to account for the following emission categories:

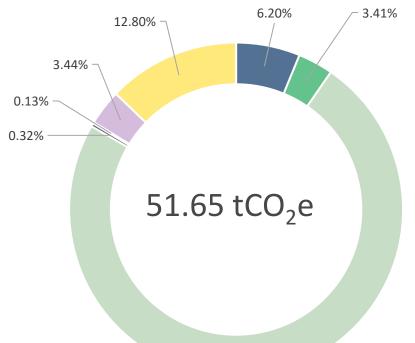
Emission Category	Notes
Scope 1	
Gas	Included in calculation
Scope 2	
Mains Electricity	Included in calculation
Scope 3	
Purchased Goods and Services	Included in calculation
Capital Goods	No capital goods purchased in time frame
Fuel and Energy Related Activities	Included in calculation
Upstream Transport	Not relevant to organisation
Waste Generated	Included in calculation
Business Travel	Included in calculation
Employee Commute	Included in calculation
Upstream Leased Assets	Any leased asset accounted for in Scope 1 and 2
Downstream Transport	Not relevant to organisation
Processing of Sold Products	Not relevant to organisation
Use of Sold Products	Not relevant to organisation
End of Life Treatment of Sold Products	Not relevant to organisation
Downstream Leased Assets	Not relevant to organisation
Franchises	Not relevant to organisation
Investments	Not relevant to organisation



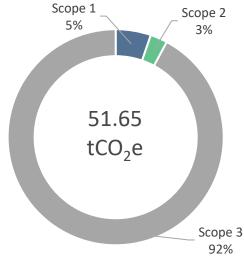


## Carbon Footprint

January 2023 – December 2023



- Gas
- Electricity
- Purchased Goods and Services
- Waste
- Water
- Business Travel
- Commute



Scope	tCO <sub>2</sub> e	%
Scope 1	2.71	5
Scope 2	1.33	3
Scope 3	47.60	92
Total	51.65	100

Emission Category	Scope	tCO <sub>2</sub> e	%
Gas	1,3	3.17	6.20
Mains Electricity	2,3	1.76	3.41
Purchased Goods and Services	3	38.09	73.70
Waste Generated	3	0.17	0.32
Water	3	0.06	0.13
Business Travel	3	1.78	3.44
Employee Commute	3	6.62	12.80
Total		51.65	100





73.70%

### P Operational Breakdown

To aid decision making, emissions categories have been combined to highlight the impact of different operational areas.



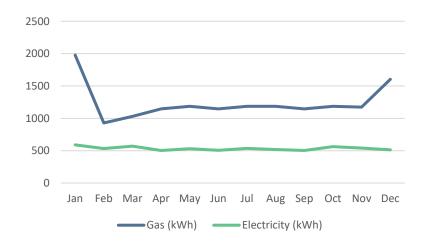






■ Gas ■ Electricity

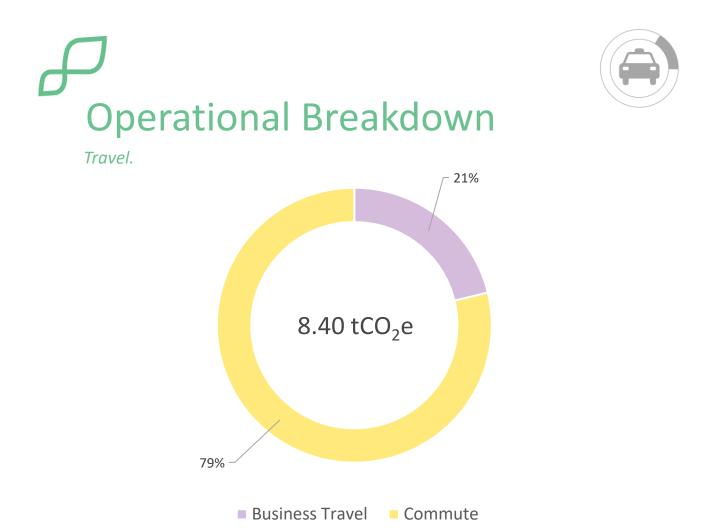
Building-related emissions combines those associated with heating, cooling and power supply, including associated 'Scope 3: Fuel and Energy Related Activities'. These emissions account for 9.5% of overall emissions. Gas consumption makes ups nearly two thirds of building-related emissions, with electricity responsible for the remaining third.



The graph on the left shows monthly kWh use of gas and electricity. Both remain fairly constant throughout the year, with gas use increasing in December and January.







Employee commute, including working from home, and business travel have been combined to show all travel-related emissions. These account for 16.3% of overall emissions.

Business travel accounts for 21% of travel-related emissions, 99% of which is due to staff undertaking business travel in their own vehicles. Train travel and one hotel stay makes up the remaining 1%

A survey was used to determine staff commute and working from home habits, with subsequent emissions accounting for 79% of travel-related emissions.

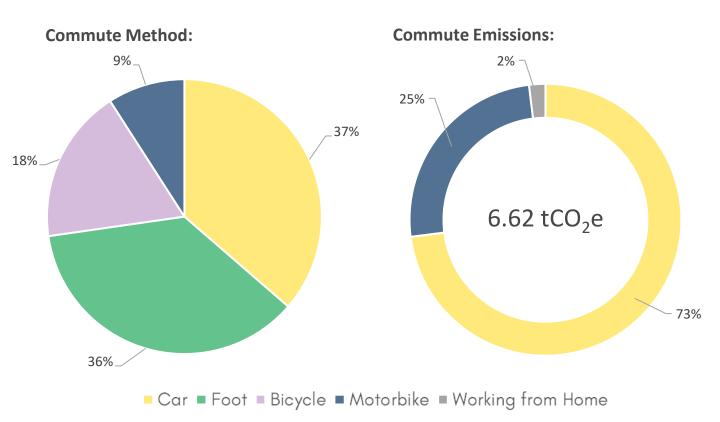








#### Travel.

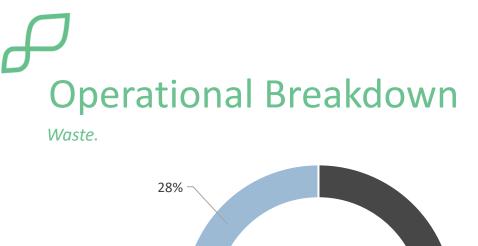


Commute by BBA Architects' staff makes up 79% of travel-related emissions. The pie chart on the left shows the popularity of commute methods, with the pie chart on the right showing the associated emissions, including working from home.

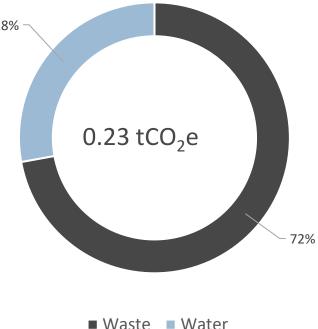
55% of staff travel using zero emission transport methods, namely walking and cycling. Commute by car is the most popular and emitting transport method accounting for 73% of commute emissions. 25% are associated with commute by motorbike and 2% are due to staff working from home.



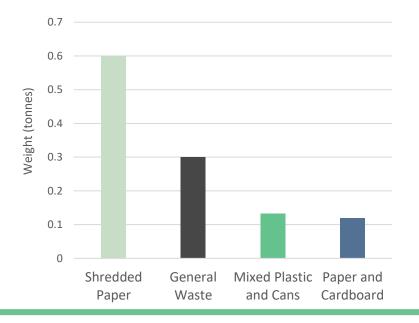








Waste-related emissions includes those associated with waste disposal, water supply and treatment. These account for less than 1% of overall emissions, 75% of which is due to the disposal of waste.



The graph on the left shows annual waste weight calculated using bin capacity, % fullness and frequency of collection. Waste is divided into four waste streams which ultimately have two end fates: recycling and landfill. Although general waste accounts for 26% of waste by weight, it accounts for 89% of waste emissions.





# Operational Breakdown



#### Supply Chain.

SIC	Category	Av Intensity (kgCO2e/£)	Spend (£)	tCO <sub>2</sub> e
Accounting	Financial and Office Support Services	0.128	Redacted	0.82
Advertising	Marketing and Events	0.110	Redacted	0.36
Services to Buildings	Building Services	0.171	Redacted	7.69
Computers and Electronics	Electronic Products	0.382	Redacted	7.55
Retail	Retail Trade Services	0.174	Redacted	0.77
Financial Services	Financial and Office Support Services	0.110	Redacted	0.07
Insurance	Financial and Office Support Services	0.076	Redacted	1.52
Repair and Installation	Repair and Maintenance	0.187	Redacted	0.08
Computer Repair	Repair and Maintenance	0.110	Redacted	0.09
Office Administration	Financial and Office Support Services	0.118	Redacted	0.21
Employment Services	Recruitment and Training	0.118	Redacted	0.48
Entertainment	Marketing and Events	0.202	Redacted	0.12
Education Services	Recruitment and Training	0.103	Redacted	0.59
Other Professional Services	Professional Services	0.191	Redacted	14.36
Membership Fees	Membership Organisations	0.121	Redacted	0.85





### P Operational Breakdown



#### Supply Chain.

SIC	Category	Av Intensity (kgCO2e/£)	Spend (£)	tCO <sub>2</sub> e
Telecommunication Services	Telecommunications	0.105	Redacted	0.65
Land Transport	Land Transport Services	0.603	Redacted	1.88
			Redacted	38.09

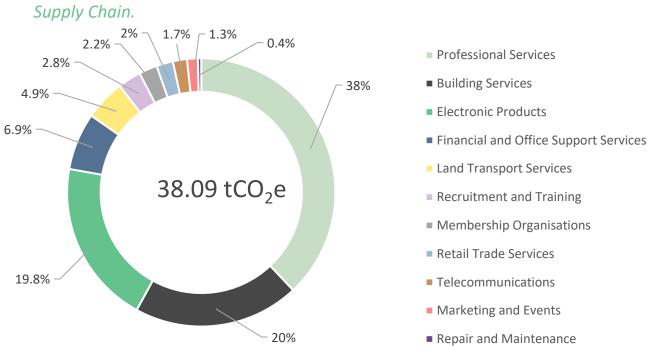
To calculate emissions associated with BBA Architects' suppliers and service providers, spend with each company was provided. The spend method was then used to assign emissions. Companies have been classified by SIC code to allow allocation of industry average carbon intensities from a database published by DEFRA.

The table above shows the sector average carbon intensities used alongside the associated spend and subsequent emissions. SIC codes have been further categorised for data visualisation purposes.





### P Operational Breakdown



Supply chain emissions account for 73.7% of BBA Architects' overall emissions. The graph above shows the contribution of each SIC category to supply chain emissions.

'Professional Services' account for the largest proportion (38%) of supply chain emissions, followed by 'Building Services' (20%) and 'Electronic Products' (19.8%).

'Professional Services' also represent BBA Architects' biggest spend accounting for 37% of total purchasing, followed by 'Building Services' (22%) and 'Financial and Office Support Services' (14%).

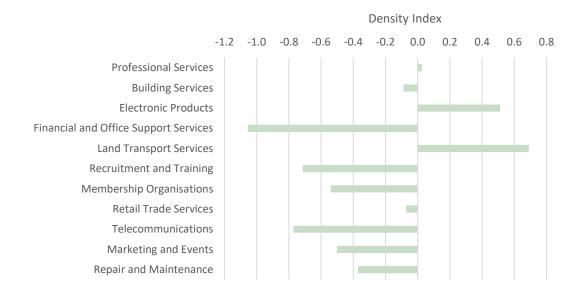






### **Operational Breakdown**

Supply Chain.



To identify intensive industries, a 'density index' has been created by dividing % contribution to emissions by % contribution to spend. In the graph above, industries with a density index more the zero contribute more to emissions than spend, representing relatively intensive industries. The opposite is true for industries with a density index less than zero.

Spend in the 'Land Transport Services' and 'Electronic Products' industries are relatively intensive, contributing more to emissions than spend. Spend on 'Financial and Office Support Services' is the least intensive.

By highlighting carbon intensive industries, BBA Architects can focus their reduction action to where it will have the biggest impact.







### Section 2: Reduction

- Reduction
   Opportunities
- Net Zero Pathway





#### Building

#### Electricity Consumption

Electricity consumption accounts for just over 3% of BBA Architects' overall emissions. Main users of electricity include office equipment and servers. Fluorescent lighting is fitted throughout.

#### Reduction Opportunities:

- Continue to record electricity consumption monthly
- Ensure sleep timers are set on all laptop and desktops
- Upgrade lighting to LEDs and install motion sensors in areas of in frequent use (ie. bathrooms and corridors)
- Install a smart meter to track electricity consumption half hourly
- Speak with landlord to determine feasibility of on-site solar generation

#### Space Heating

BBA Architects have gas central heating, with gas consumption accounting for just over 6% of overall emissions. They work across two floors with open plan office space on the first floor and a cellular layout on the ground floor. A timed control for heating in set in winter months and reviewed by directors. Some individual radiator controls are present, with electric heaters sometimes used in winter months. The boiler is thought to be relatively old.

#### **Reduction Opportunities**

- Regularly update heating times and temperatures
- Ensure windows are closed when heating is in use and encourage use of radiator controls where possible
- Determine feasibility of zonal/smart heating controls, allowing for varying temperature control of first and ground floors
- Consider radiant heating for smaller offices
- Speak with landlord to determine feasibility of a boiler upgrade and/or electrification of heating system



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#### Building

#### Heat Efficiency

The building is thought to have relatively poor heat efficiency, with fluctuating indoor temperatures. Some single glazing windowpanes are present with little roof and wall insulation.

#### Reduction Opportunities:

- Ensure all pipes delivering hot water are insulated
- Fit blinds/curtains on windows to reduce heat loss in winter and solar gain in summer
- Speak with landlord to check and upgrade wall and roof insulation
- Speak with landlord to upgrade all windows to at least double glazing
- Undertake a heat loss survey to accurately target areas of inefficiency
- Create a checklist to refer to during lease agreements to ensure high performance of any new office locations



#### Travel

#### Business Travel

Business travel is undertaken by BBA Architects' staff for site visits and client meetings. This largely takes place in the local area with some travel to neighbouring counties. There are no company vehicles with travel predominately undertaken in staff-owned vehicles.

#### Reduction Opportunities:

- Plan journeys to ensure most efficient routes are taken
- Ensure all staff are aware of low carbon travel policy and promote the use of train travel wherever possible
- Record mileage for public transport
- Consider investing in company-owned EV





#### Travel

#### Staff Commute

Staff commute accounts for 12.8% of overall emissions. BBA Architects support the 'Cycle to Work Scheme' and provide secure bike storage. There are no shower facilities on site. A small number of parking spaces are available and generally reserved for directors. There are no EV charging facilities on site.

#### Reduction Opportunities:

- Undertake staff survey regularly to account for seasonal changes in commute habits
- Include questions to determine staff attitudes and barriers to low carbon commute
- Share public transport promotions among staff (ie. West of England free bus pass in birthday month)
- Promote car sharing and offer priority parking
- Add information to job descriptions that highlights public transport routes
- Ensure facilities are available to promote low carbon commute (EV charging/showers)

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#### Waste

#### Minimisation and Fate

BBA Architects separate their waste into 'Plastic and Cans', 'Paper and Cardboard', 'General Waste' and 'Shredded Paper'. Sampling was used to estimate annual waste generation. BANES City Council are responsible for waste collection with general waste fate assumed to be landfill.

#### **Reduction Opportunities:**

- Track waste generation regularly
- Undertake waste audit to determine what is being thrown away as 'General Waste'.
- Consider switching collection provider to guarantee zero waste to landfill







#### **Supply Chain**

#### Purchased Services

Purchased goods and services account for the majority (73.7%) of BBA Architects' total emissions. Supply chain emissions were calculated used industry average carbon intensities. To represent suppliers and service providers more accurately, as many company-specific carbon intensities as possible should be used to allocate emissions. Supply chain engagement will therefore be essential to carbon reduction and meeting net zero targets.

#### Reduction Opportunities:

- Engage with supply chain to determine which suppliers and service providers have undertaken a carbon assessment, asking them to provide Scope 1 and 2 carbon intensities.
- Encourage suppliers and service providers to undertake their own carbon assessment
- Prioritise those with high spend or in high intensity industries
- Include commitment to carbon reduction in procurement policy



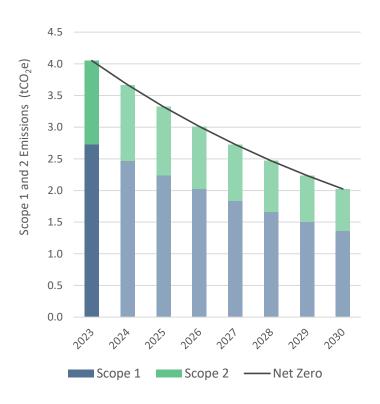


### P Net Zero Pathway

**Net zero refers to the absolute reduction of all relevant emission categories.** SBTi offers pathway guidance to limit global temperature increase to 1.5°C above preindustrial levels and achieving net zero no later than 2050. Organisations are required to set both near-term and long-term targets, with SBTi offering validation services for target setting. To note, location-based emission reporting is used for net zero modelling.

#### Near-Term Targets

These targets refer to the absolute reduction in Scope 1 and 2 emissions from a baseline year that should be achieved by 2030. This assessment marks the baseline year for BBA Architect's reporting.



Scope	Current (tCO <sub>2</sub> e)	2030 Target (tCO <sub>2</sub> e)
Scope 1	2.72	1.36
Scope 2	1.33	0.66
Total	4.05	2.03
Reduction	-	50%

Achieving their near-term target requires BBA Architects to reduce Scope 1 and 2 emissions by **9.4% annually.** 

To achieve this focus should be given to minimising Scope 1 emissions relating to space heating.



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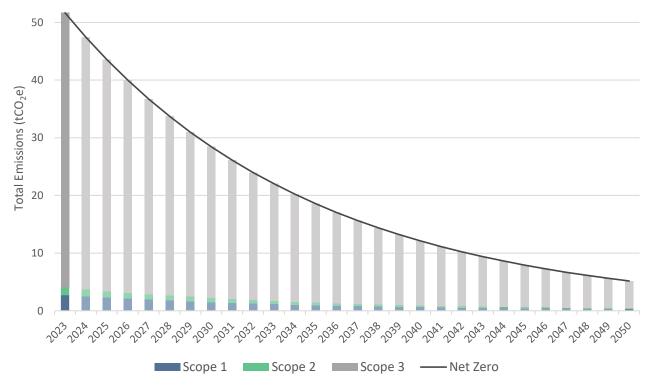
Near-Term Target: 50% reduction from 2023 baseline.

### P Net Zero Pathway

#### Long-Term Targets

These targets are net zero targets, referring to the absolute reduction in all relevant emissions by 2050. Once the target has been achieved, residual emissions should be balanced through permanent carbon removal.

Long-Term Target: 90% reduction from 2023.



Scope	Current (tCO <sub>2</sub> e)	2050 Target (tCO <sub>2</sub> e)
Scope 1	2.72	0.27
Scope 2	1.33	0.13
Scope 3	47.60	4.76
Total	51.65	5.17
Reduction	-	90%

The graph above represents BBA Architect's net zero pathway, requiring an **8.2% annual reduction** across all emission categories to achieve a 90% reduction by 2050.

As a significant reduction in Scope 3 emissions will be required to achieve net zero, stakeholder engagement and alignment to company targets is essential.





### P Next Steps

This report provides a comprehensive list of carbon reduction measures, encouraging action and focusing decarbonisation efforts. At Future Leap we recognise the barriers many businesses face in the implementation of suggested carbon-saving interventions. To this end, Future Leap Eco-fit and Future Leap Finance have been established to remove some of these barriers and enable pro-active action.

#### **Future Leap Eco-Fit**

Future Leap Eco-Fit are committed to empowering businesses with solutions that not only minimise environmental impact but also boost operational efficiency and costeffectiveness. As a retrofit contract manager, they specialise in bridging the gap between the required efficiency upgrades and skilled installers of low carbon technology. To find trusted suppliers and installers, or to find out more about Future Leap Eco-Fit, contact James Sessions-Hodge: ecofit@futureleap.co.uk

#### **Future Leap Finance**

Financial limitations are common for all organisations. Future Leap Finance provides financing options to support investment in property retrofit and environmental technologies. Future Leap Finance's panel of lenders are chosen due to their approach to ESG and internal governance, commitment to impact lending and assurance of ethical source of funds. For information about how Future Leap Finance can accelerate the implementation of carbon reduction measures, contact: finance@futureleap.co.uk

#### **Future Leap Network**

As part of the Consultancy process, BBA Architects has been registered with Future Leap's business network. This membership includes access to our events programme and networking opportunities. Our Network Manager will be contact to initiate sign up.





#### Appendix 1: Raw Data Table

Emission Category	Amount	Units	tCO <sub>2</sub> e
Scope 1			
Combusted Fuel			
Gas	14,895.72	kWh	2.72
Scope 2			
Purchased Electricity			
Mains Electricity	6,399.90	kWh	1.33
Scope 3			
Fuel and Energy Related Activities			
Gas	14,895.72	kWh	0.45
Mains Electricity	6,399.90	kWh	0.43
Purchased Goods and Services			
Accounting	Redacted	£	0.82
Advertising	Redacted	£	0.36
Services to Buildings	Redacted	£	7.69
Computers and Electronics	Redacted	£	7.55
Retail	Redacted	£	0.77
Financial Services	Redacted	£	0.07
Insurance	Redacted	£	1.52
Repair and Installation	Redacted	£	0.08
Computer Repair	Redacted	£	0.09
Office Administration	Redacted	£	0.21
Employment Services	Redacted	£	0.48
Entertainment	Redacted	£	0.12
Education Services	Redacted	£	0.59
Other Professional Services	Redacted	£	14.36





#### Appendix 1: Raw Data Table

Emission Category	Amount	Units	tCO <sub>2</sub> e
Membership Fees	Redacted	£	0.85
Telecommunication Services	Redacted	£	0.65
Land Transport	Redacted	£	1.88
Waste			
Shredded Paper	0.6	tonnes	0.01
General Waste	0.3	tonnes	0.15
Mixed Plastic and Cans	0.132	tonnes	0.005
Paper and Cardboard	0.12	tonnes	0.005
Water			
Water Supply	175.5	m <sup>3</sup>	0.03
Water Treatment	166.73	m <sup>3</sup>	0.03
Business Travel			
Staff-Owned Vehicles	5,215.2	miles	1.77
Train Travel	56	miles	0.00
Hotel Stays	1	night	0.01
Staff Commute			
Car	14,280	miles	4.83
Foot	2,270.4	miles	0.00
Bicycle	2,592	miles	0.00
Motorbike	7,200	miles	1.66
Working from Home	384	hours	0.13
Total			51.65





#### Appendix 3: Assumptions and Caveats

Emission Source	Scope	Units	Data Source	Assumptions
Gas	1,3	m <sup>3</sup>	Meter Readings	Meter readings were provided for the 12 month period. The following formula was used to convert to kWh: (m <sup>3*</sup> 39.5*1.023)/3.6
Mains Electricity	2,3	kWh	Meter Readings	Meter readings provided for 12 month period allowing kWh to be determined.
Purchased Goods and Services	3	£	Meter Readings Purchase Ledger	Annual expenses provided for 12 month period. Companies were classified by SIC Code.
Waste	3	Litres	Size of Bins and Assumed Fullness	Bin size, % fullness and frequency of collection provided, allowing annual generation to be extrapolated.
Water	3	m <sup>3</sup>	Meter Readings	Meter readings provided allowing consumption to be determined. A sewerage rate of 95% was assumed.
Business Travel	3	Miles	Expense Claims	Mileage expenses provided. 'Average car, unknown fuel' conversion factor used.
Commute	3	Miles	Completed Questionnaire	Annual commuting and working from home habits extrapolated from staff survey.





#### Appendix 3: Reduction Plan

Area	Quick Wins	Strategic Action
Building		
Electricity Consumption	<ul> <li>Track consumption</li> <li>Set sleep timers on office equipment</li> <li>Install LEDs and motion sensors</li> </ul>	<ul><li>Install smart meter</li><li>Solar PV feasibility</li></ul>
Space Heating	<ul> <li>Regularly update heating times and temperatures</li> <li>Close windows when heating is in use</li> <li>Encourage use of radiator controls</li> </ul>	<ul> <li>Feasibility of zonal heating</li> <li>Radiant heating in small office spaces</li> <li>Boiler upgrade of electrification of heating</li> </ul>
Heat Efficiency	<ul> <li>Insulate pipes</li> <li>Fit blinds/curtains</li> <li>Check list for future lease agreements</li> </ul>	<ul> <li>Upgrade insulation</li> <li>Upgrade windows</li> <li>Heat loss survey</li> </ul>
Travel		
Business Travel	<ul> <li>Plan routes</li> <li>Staff awareness of low carbon travel policy</li> <li>Promote train travel</li> <li>Record mileage of public transport</li> </ul>	Company-owned EV
Staff Commute	<ul> <li>Regularly undertake survey</li> <li>Determine staff attitudes and barriers to low carbon commute</li> <li>Share public transport promotions</li> <li>Offer priority parking to sharers</li> <li>Add public transport information to job descriptions</li> </ul>	<ul> <li>Provide facilities to promote low carbon commute (showers/EV charging)</li> </ul>





#### Appendix 3: Reduction Plan

Area	Quick Wins	Strategic Action
Waste		
Minimisation and Fate	<ul> <li>Regularly track waste generation</li> <li>Undertaken audit to determine what is being thrown away</li> </ul>	<ul> <li>Switch collection provider to ensure zero waste to landfill</li> </ul>
Supply Chain		
Purchased Goods and Services	<ul> <li>Engage with supply chain to determine company-specific carbon intensities</li> <li>Encourage supply chain to undertake carbon assessment</li> <li>Prioritise engagement with those in high intensity industries or with high spend</li> </ul>	<ul> <li>Include commitment to carbon reduction in procurement policy</li> </ul>



