Report Title: **Carbon Footprint Report**

Report prepared for: **GOS Heating Limited**

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Transforming our World: the 2030 Agenda for Sustainable Development

Adopted by all United Nations Member States in September 2015, the 2030 Agenda provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.

The Chambers Climate Coalition - Making Climate Action Everyone's Business

East Lancashire Chamber of Commerce have committed to taking action on climate change and have become a signatory of the International Chambers of Commerce Climate Coalition.

This commits us to acting immediately to reduce greenhouse gas emissions associated with our own activities, as well as advocating and supporting climate action within our public and private sector networks.

The Chamber support the United Nations call for the Race to Net Zero and the Sustainable Development Goals.

Chamber Low Carbon Programme

East Lancashire Chamber of Commerce and Industry in partnership with North & Western Lancashire Chamber of Commerce, BOOST and Preston City Council are supporting Preston City businesses in saving money, reducing their carbon footprint, stimulating low carbon innovation, and achieving their Net Zero Carbon ambitions.

This UK Government supported programme is committed to the provision of a suite of FULLY FUNDED services aimed to help businesses improve energy and environmental efficiencies, introduce on site renewable energy generation and save money.

Every eligible business (Preston based of any size), signing up to the projects are entitled to fully funded support in environmental and energy saving/efficiency good practice, developing Net Zero targets and Carbon Reduction Plans and guidance on low carbon technology adoption. The support will be delivered via a suite of events, masterclasses and 1-2-1 bespoke support.

Further information and additional resources can be located on the Chamber Low Carbon website; Chamber Low Carbon

Disclaimer

This Carbon/Energy & Environmental Review Report covers the main items of direct and indirect Environmental Impacts, issues and good practice affecting a business. It covers assessment of performance as identified in discussions with staff during the office and site visit. This report highlights those areas where environmental operation and strategy of the business could be improved as well as commending those where good practice already occurs.

The Carbon/Energy & Environmental Review is done in good faith and within a limited time frame. In addition, it should be noted that the Carbon/Energy & Environmental Review is not a technical compliance audit, and no testing or sampling of polluting agents (land, air or water) has taken place.

East Lancashire Chamber of Commerce and its advisors will make every effort to ensure the information provided through this report is appropriate and accurate, however only the courts can authoritatively interpret the law and only Acts and regulations have force of law.

The final decision regarding any advice/information provided by the Chamber Low Carbon Programme is the commercial responsibility of the client business. This report has been produced, checked, and approved for issue under the Chamber Low Carbon Programme's own quality assurance system.

East Lancashire Chamber cannot accept responsibility for errors/and or omissions within this document or loss occasioned to persons acting or refraining from action as a result of the material in this document.

We have endeavoured, where appropriate, to provide background information and contacts, however, where required, further advice and information can be sought from the Chamber Low Carbon Programme.

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1.Introduction

Climate change has been identified as one of the greatest challenges facing the world today and could lead to significant changes in resource use, production, economic activity and indeed life on this planet.

There is increasing pressure on business from consumers, B2B clients and governments for businesses to be seen to be behaving responsibly.
In November 2021the UK Government hosted the United Nations 26th Conference of Parties (COP 26) in Glasgow. Ahead of this the UK and other Governments have strengthened their resolve to tackle climate change.

The UK has amended its Climate Change legislation in 2019, (the Climate Change Act) and enshrined a new Carbon Net Zero target of 2050 with a 78% reduction in emissions compared to 1990 levels by 2035. This is a radical change from the 80% reduction by 2050 compared to 1990 levels of greenhouse gas emissions. In October 2021 it also published its Net Zero Strategy: Build Back Greener.

A carbon footprint is a measure of the impact that human activities have on the environment in terms of the amount of greenhouse gases produced, measured in tonnes of carbon dioxide equivalents.

GOS Heating Ltd is a heating and plumbing company based in Preston. They are a family-owned business and have been trading for over 50 years. They provide a range of services including plumbing, heating, electrical works and renewable technologies, to residential and commercial clients.

The building occupied by the offices is an old manor house, originally built in 1920 as the family home for Sir Edwin Booth.

The building is built of stone with a slate roof and is double glazed. The walls are solid and there is insulation in the loft space.

There is also a storage unit at Oyston Mills in Preston where spare parts and waste removed from site are held. There are no utilities at this site.

GOS Heating Ltd occupy the top floor of the building, and the ground floor is occupied by Thurby Social Club. There is a shared carpark.

The company's hours of operation are Monday to Friday 9:00 am to 5:00 pm

GOS Heating has engaged East Lancashire Chamber of Commerce Sustainability Team funded via the Chamber Low Carbon Programme to calculate the carbon footprint and develop a Carbon Reduction Plan on their behalf to cover its organisational and operational activities within the defined scope.

The scope is the reporting period June 2023 to May 2024 with the included activities.
- Company Infrastructure

- Operations and Technologies.

- Staff Commute

- Company Vehicles

Emissions sources include those from energy consumption such as electricity and non-renewable fuel consumption from its primary operational building, associated processes and activities, transport and operations.

The Carbon Footprint Report has sought to establish and document the:
- Organisational and operational boundaries.

- Greenhouse gas (GHG) emissions sources.

- Data collection methodologies

- GHG emissions calculations
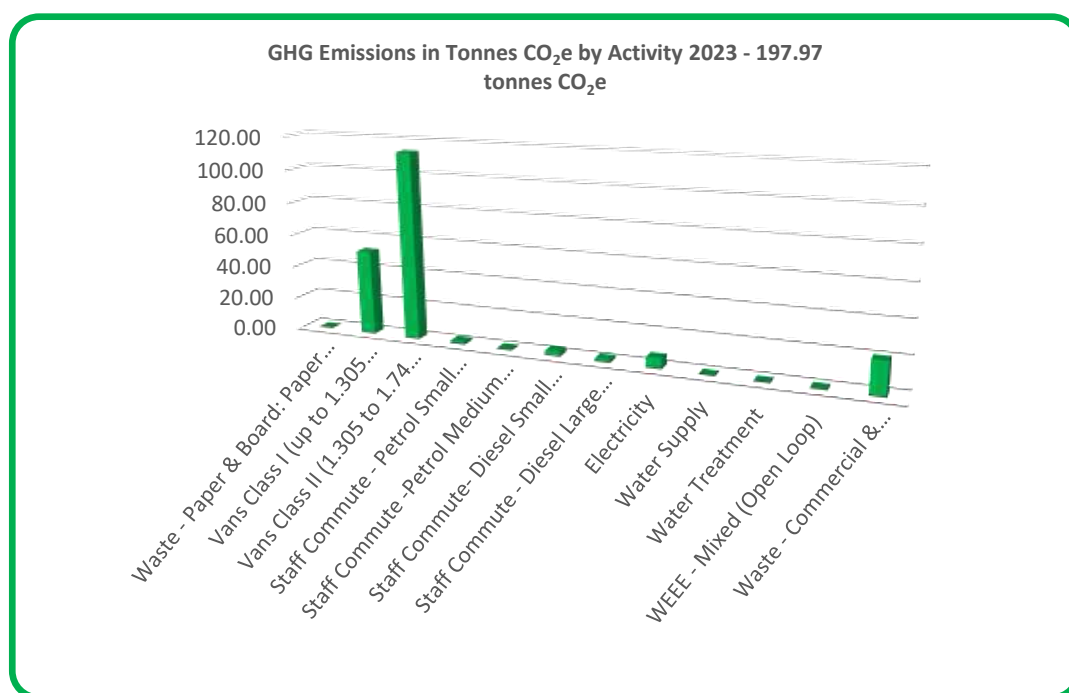
Graph 1 Greenhouse Gas Emissions by Activity (tonnes)
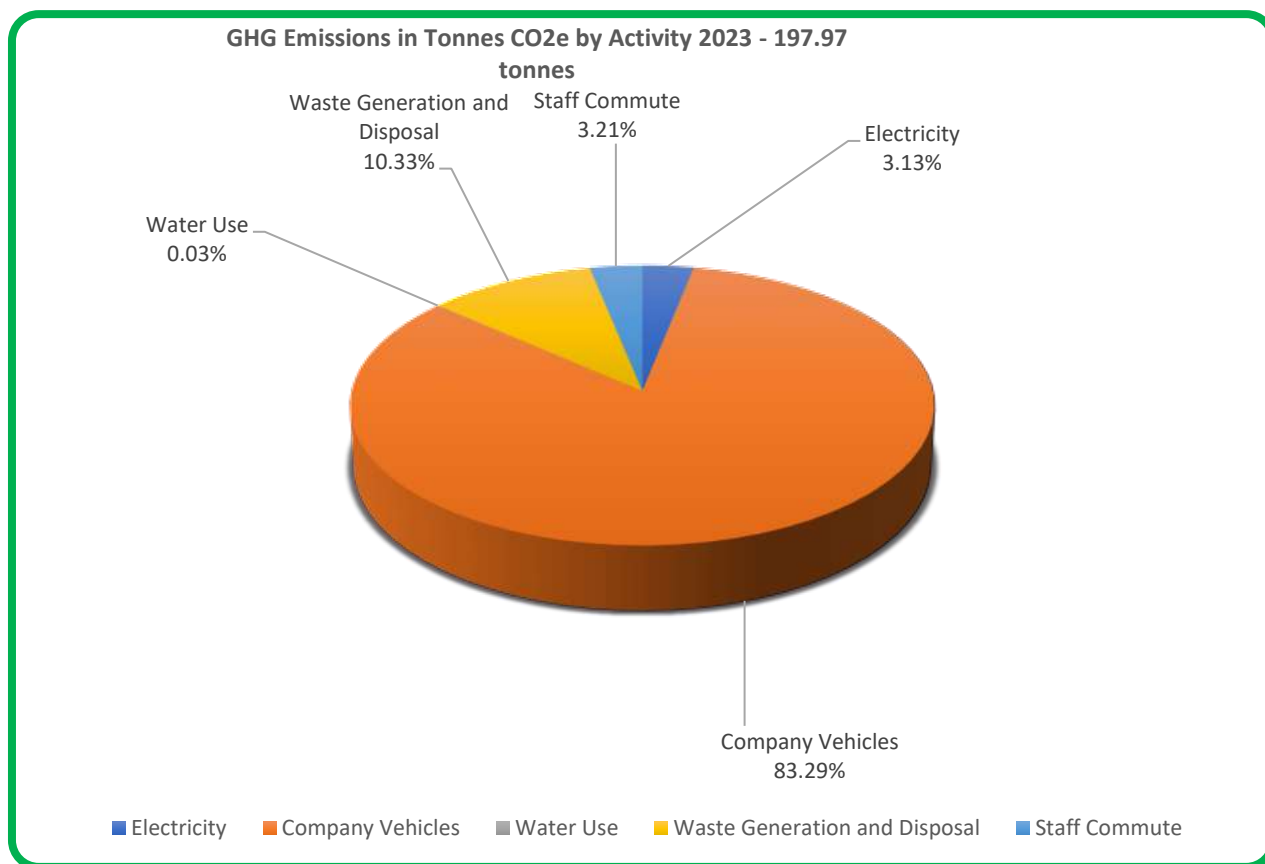
Graph 2 Greenhouse Gas Emissions by Activity (%)

As can be seen from the graphs above, by far the largest components of the Company's carbon footprint in the reporting period comes from Company Vehicles.

Concentrating on ways to reduce emissions and fuel usage would have the most impact on reducing the company's carbon footprint.

Activity	2023 tonnes CO$_2$e
Electricity	6.21
Company Vehicles	164.87
Site Vehicles	0.00
Water Use	0.07
Waste Generation and Disposal	20.45
Staff Commute	6.36
	197.96

	2023 tonnes CO$_2$e
Scope 1	132.53
Scope 2	4.67
Scope 3	60.76
	197.97

Activity	Unit	Volume	Scope 1 tCO$_2$e	Scope 2 tCO$_2$e	Scope 3 tCO$_2$e	Tonnes CO$_2$e	%	O/S Scopes tCO$_2$
Electricity	kWh	22576		4.67	1.54	6.21	3.13	2.6
Waste – Refuse (Combustion)	tonnes	63			20.46	20.46	10.34	
Water	m3	18743			0.07	0.07	0.04	
Business Travel Grey Fleet	miles	506275	132.53		32.34	164.87	83.28	
Staff Commute (Average Car)	miles	20194			6.36	6.36	3.21	
Totals			132.53	4.67	60.76	197.97	100.00	2.6

Table 1: Activity and Scopes Volumes, Emissions and %

2.Organisational Boundaries

This carbon footprint report covers the period June 2023 to May 2024. GOS Heating Ltd has chosen to include sources of GHG emissions from its UK business operations over which it has 100% operational and financial control.

The operations covered by this footprint include:
- **Scope 1** direct emissions,

- **Scope 2** indirect emissions,

- **Scope 3** indirect emissions (supply chain)

- **Outside of Scopes** All fuels with biogenic content (such as 'diesel, petrol (average biofuel blend) and biomass) should have the 'outside of scopes' emissions reported to ensure a complete picture of an organisation's emissions is created.

Direct emissions are those GHG emissions which are emitted directly from on-site operations such as combustion of natural gas in boilers or fuel in company owned vehicles.
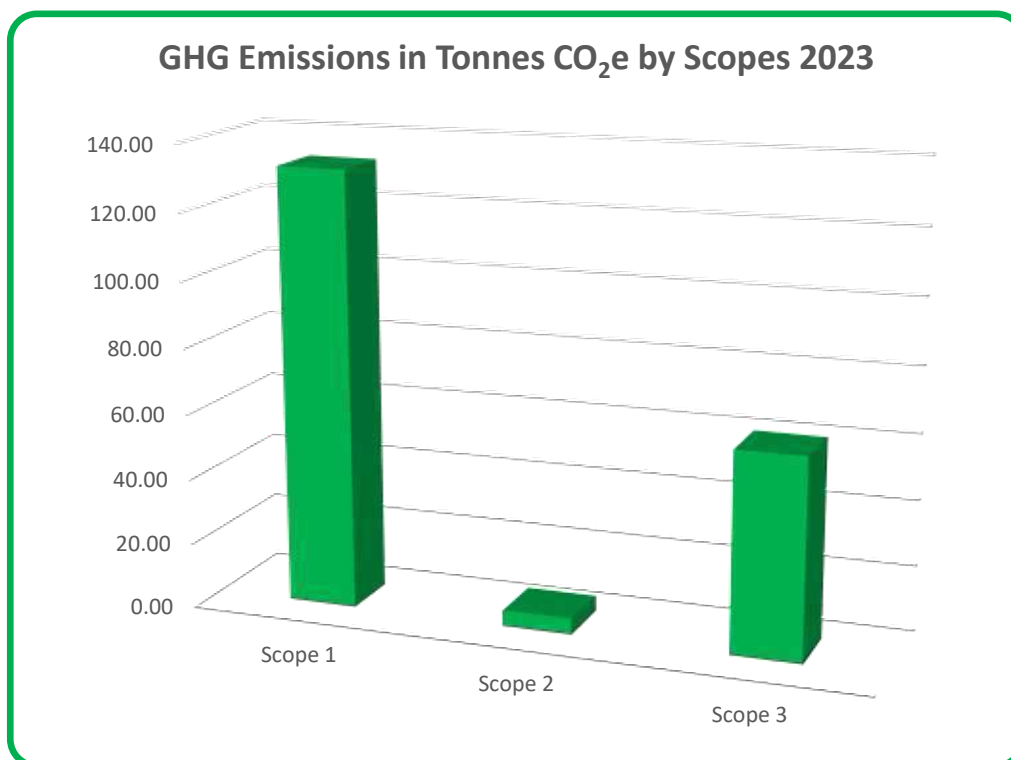
Indirect emissions include activities associated with the generation of electricity consumed by the company.

Outside of scopes includes biogenic CO$_2$ factors that should be used to account for the direct carbon dioxide (CO$_2$) impact of burning biomass and biofuels, including when reporting emissions from electricity consumption.

Biogenic CO$_2$ emissions are one of several activities labelled 'outside of scopes' by the GHG Protocol Corporate Accounting and Reporting Standard because the Scope 1 impact of these fuels has been determined to be a net '0' (since the fuel source itself absorbs an equivalent amount of CO$_2$ during the growth phase as the amount of CO$_2$ released through combustion).

Full reporting of any fuel from a biogenic source, including electricity, should have the biogenic CO$_2$ value documented to ensure complete accounting for the emissions created.

It is good practice for a carbon footprint to include all scope 1 and 2 emissions; it is then the choice of the organisation as to which scope 3 emissions to include.

Graph 3 Greenhouse Gas Emissions by Scopes

Table 2 below shows the indirect and direct activities, as well as an explanation of how these activities create GHG emissions:

Scope	Indirect or Direct Emission	Operational Activity
Scope 1	Direct	Company Vehicles
Scope 2	Indirect	Electricity Consumed (light, power and heating of the office areas)
Scope 3	Indirect	Water Consumed and Wastewater Treated (domestic)
		Business Travel, Grey Fleet, Air and Rail
		Staff Commute (miles in staff's private vehicles)
		Wastes Generated and Treated
		Energy Related Activities not already included in Scope 1 and 2
Outside of Scopes	Indirect	Location consumption of grid electricity

Table 1: Indirect and Direct activities

GOS Heating Ltd maintains all the emissions data relating to each of these activities in a GHG inventory, this is available on request.

A few emission sources have not been included in the GOS Heating Ltd carbon footprint. This is either because the data source is incomplete or has a high degree of uncertainty and has been excluded from the footprint altogether.

For a number of these emissions, it is hoped that data capture/quality can be improved over time, which will enable these emissions to be included within the footprint in the future. Items not included in this footprint can be found in "Exclusions" section below.

3.Exclusions

After investigation, the emissions sources in the table below have been identified and excluded from the GHG emissions inventory.

Further to this, where data, which is classed as scope 3, is considered insignificant in magnitude to the business and/or data is not easily accessible this has been excluded with the hope to include this in the future.

GHG Emissions Source	GHG Emissions Scope	Reason for exclusion
Purchased Goods and Services	Indirect (Scope 3)	Excluded due to lack of available data and accurate conversion factors
Upstream & downstream transportation & distribution of materials & products	Indirect (Scope 3)	Excluded due to lack of available data and accurate conversion factors

Table 3: GHG Emissions Excluded Emissions Inventory

4.Methodology

The Green House Gas (GHG) Reporting Protocol – Corporate Standard has been followed to allow easy comparison with equivalent organisational reporting. Carbon emissions are therefore reported as Scope 1, 2 and 3 emissions.

The principles of ISO 14064-1:2018 Greenhouse gases – Part 1: Specification with guidance at the organisation level for quantification and reporting of greenhouse gas emissions and removals have been employed.

The UK Government GHG Conversion Factors for Company Reporting for 2023 (Full Set Version 2) have been used to prepare this report which complies with the requirements of Procurement Policy Note 06/21: Taking account of Carbon Reduction Plans in the procurement of major government contracts.

The carbon footprint for 2023has been produced using aggregated data supplied by the Company. No primary data was viewed or sampled for accuracy or completeness.

5. Data

5.1 Double Counting

Double counting refers to situations where emissions have been included and potentially offset in the GHG emissions inventories of two different organisations e.g., a company and one of its suppliers/contractors. This is relevant to all indirect (scope 2 and 3) emissions.

Where the organisation is collating its carbon inventory, it must ensure that all GHG emissions and removals are reported appropriately. Emissions should not be understated due to emissions or removals that have already been counted by another organisation.

5.2 Uncertainty

GOS Heating Ltd has adopted a consistent methodology to collect data to minimize uncertainty and ensure accuracy. However, there are uncertainties related to some of the data sources as well as gaps in the data.

The Company will aim to reduce the aggregated uncertainty of the carbon footprint data year on year.

This GHG emissions inventory has several uncertainties associated with the input data and emissions calculations.

It has been calculated that the GOS Heating Ltd 2023 Carbon Footprint has a "Fair" level of confidence at +/- 19.1 %. Figure 1 shows the aggregated uncertainty tool for 2023.

Figure 1:Uncertainty Tool

This workbook was developed by ICF Inc, USA, with and for the GHG Protocol Initiative. The road test draft of the workbook was peer reviewed by Fred Keller/Carrier, Dr S Devotta/NCL, Mr. R S Iyer/India, Tom Werkema/GGEEC, and Deborah Ottinger and Dave Godwin from US-EPA. Dr Brad Upton from NCASI and Anthony Dvarskas from WRI also contributed to technical review of the guidance and tool. The intellectual property rights belong to World Resources Institute and the World Business Council for Sustainable Development.

GOS Heating Ltd will aim to reduce the aggregated uncertainty of the carbon footprint data year on year.

This GHG emissions inventory has several uncertainties associated with the input data and emissions calculations. Table 3 below lists the major uncertainties for each emission.

Emissions Source	Uncertainties
Waste	Most of the waste data provided was based on estimated weights provided by the waste contractor. The data for quantity of WEEE generated and disposed of was assumed to be accurate.
Staff Commute	It was assumed that the shortest journey by internet-based journey planner was taken. Attendance estimated based on number of available working days, with allowances for holidays and average sick days absence.
Business Travel	Grey fleet based on average sized car unknow fuel. It was also not clear how many people travelled per journey.
Electricity and Gas	Data supplied by the client and assumed supplied via the landlord and actual readings.
Water	Water data supplied via the landlord

Table 4: GHG Emissions Source Data Uncertainties by Emission

5.3 Benchmarking and Intensity Metrics

GOS Heating Ltd has chosen to utilise an intensity metric that will support comparison to the baseline emissions in future years and will hopefully also seek to measure its emissions against peers for transparency. The chosen intensity measurement ratios are total gross emissions in metric tonnes CO_2e per employee and per £1m turnover.

Year	2023
Total Tonnes CO_2e	197.97

Table 5: Carbon Intensity Ratio

6.Current Energy Efficiency Actions

- Solar PV
- Air Conditioning unit for heating and cooling – new
- LED Lighting in the offices and car park with sensors outside and in the washroom areas.

7. Findings/Observations

7.1 Scope 1 – Heating

To avert the impact of climate change we must reduce our carbon emissions; this is not news. However, many of us don't realise that heating buildings has an environmental impact. Most buildings in the UK, whether homes or businesses, run on fossil fuels such as gas or oil; as a result, heating contributes to approximately 37 per cent of the UK's carbon emissions.

A new air con system has been installed which provides heating and cooling.
There is no gas to site.

7.2 Scope 1 - Cooling

Air conditioning (AC) units have an environmental impact in more ways than one, but the most significant are the inputs and outputs. These popular cooling machines do not just function on their own; they are powered by electricity. The effects of electricity production and consumption alone can be detrimental to the world in which we live. (See Observations Scope 2 below).

Not only is the energy consumption detrimental, but the gases emitted from AC units are also affecting the environment. Many, if not most, of the most harmful Chlorofluorocarbon (CFC) gases have been stamped out via the Montreal Protocol, which reduces the emission of pollutants, but the gases that are still being emitted have a huge impact on global warming. It has been said that 27% of all global warming will be due to the gases emitted from air conditioning by the year 2050.

A new air con system has been installed which provides heating and cooling.

Fugitive refrigerant gas data was not provided and as such has not been included in the carbon footprint.

Opportunities for Improvement
1. Review the current maintenance arrangements are adequate and ensure that engineers working on AC and refrigeration units are suitably qualified to do so.
2. Ensure staff understand not to have the windows open when the air con is in operation.
3. Update staff inductions and toolbox talks to include Energy Efficiency and Carbon Management.

7.3 Scope 1 - Company Vehicles

The transport sector is one of the largest sources of CO_2 emissions and a major source of air pollution. Two new vehicles enter the roads every single second. By 2030 it will be more than 4. By 2030, an estimated 127 million vehicles will be produced globally. By 2035, the total number of vehicles could be 2 billion.

The environmental impact of cars will depend on how effectively we move towards electrified cars (and more fuel-efficient cars but that is not the long-term solution.

The transport sector burns most of the world's petroleum and is one of the largest sources of global greenhouse gas emissions. It's also heavy on-air pollution. Cars are a major contributor to air pollution producing significant amounts of nitrogen oxides, carbon monoxide and particulate matter. 80 – 90% of cars' environmental impact comes from fuel consumption and emissions of air pollution and greenhouse gases.

Electric vehicles can reduce greenhouse gas emissions by half in 2030 compared to fossil fuel driven cars, saving up to 540 mega tonnes of CO_2 equivalents.
Source: The World Counts (theworldcounts.com)

There are no company cars, and no business mileage takes place.

7.4 Scope 1 - Processes

Industrial activities, from the production of electricity and cement to waste management and incineration, and the intensive rearing of livestock are responsible for emissions of harmful substances, including greenhouse gasses, sulphur oxides, nitrogen oxides, ammonium, dust and mercury and other heavy metals, into the air, water, and soil.

Large scale industrial activities also eat up precious resources, use hazardous chemicals and generate pollution negatively affecting human health and the environment. In Manchester between 2015 to 2020, the industrial and commercial sectors were responsible for 22% of the total CO_2e emitted in the city. Estimated by the Manchester Climate Change Agency the total CO_2e emissions for the city was 1.8m tCO_2e.

The company receives orders through their new CRM system. The orders are scheduled by the team based on skills and location.

A site visit takes place and the work is completed, this can be domestic or commercial.
Waste is returned to the Oyston Mill site in Preston and is removed by the waste contractor.

Company specific processes have not been included in the caron footprint for 2023.

Opportunities for Improvement
1. Efficient resource management is a key aspect of sustainability. This involves minimising waste generation, optimising resource use, and recycling materials whenever possible. A waste and resources audit could be carried out to identify areas for improvement
2. Reduce your transport emissions by sourcing materials locally and where possible consolidate supplies to reduce the number of journeys required.
3. Setting sustainability targets for the business and regularly measuring your performance against them is a good way to motivate staff to follow green initiatives and boost your reputation as a responsible organisation.

7.5 Scope 2 – Electricity Consumption

The path to Net Zero - Energy has a vital role to play in achieving Net Zero. Greenhouse gas emissions from supplying energy have fallen dramatically over previous decades, but it is still the second most polluting sector and there is a long way to go to meet the Government's Net Zero target of 2035 for power.

Additionally, energy is crucial in enabling other sectors to decarbonise as we electrify transport, heating and industry. This means that the amount of electricity we need to make needs to increase dramatically, potentially tripling to 2050.

All of this must come from low carbon sources. A growing, skilled and diverse workforce will be needed to bring about this dramatic transformation in our power system. **Source UK Energy energy-uk.org.uk**

Energy efficiency reduces running costs for businesses, lowers carbon emissions and shows the public that a company is environmentally aware. From simple changes in business lighting to a full retrofit, strategic energy management will save your company money and will enhance your employee's productivity.

According to [Finder.com Comparison UK Limited](#) using British Gas data 46% of the average business's total energy consumption is consumed outside of 8:00 am – 6:00 pm

Typical appliance % of total electricity bill for a typical business can be found below:

Appliance	Percentage of Total Electricity Bill
Air Conditioning	29.15
Light Fittings	26.12
Computers	10.91
Water Cooler	6.05
Vending Machine	6.05
Kettles	4.66
Fridge	3.33
Printers	3.02
Hand Dryers	2.59
Microwave Ovens	1.73
TV Screens	1.71
Laptops	1.27
Dishwasher	1.04
Toasters	1.04
Coffee Machine	0.86
Desk Fans	0.48

Table 6 – Typical % of Total Electricity Bills attributed to Common Office Appliances

The company use electricity for air con, lighting, water heating and office equipment.

Solar panels have been installed and purchased energy is through EON and is guaranteed to be from renewable sources. The contract is in place until March 25. Bills are checked regularly.

Due to the greater use of renewables and biofuels in the generation of electricity in the UK, GHG conversion factors exist for Well to Tank (extraction, processing, and delivery of fuels to power stations) factors for electricity generation and transmission and distribution losses and because of the use of biomass there is also an outside of scopes factor thereby increasing the emissions recorded. These have been included in the carbon footprint report as Scope 3 emissions.

Purchased electricity accounted for 3.13% of the Company's carbon emissions 6.21 tonnes CO_2e. Consuming 22,576 kWh during the reporting period.

Opportunities for Improvement

1. Explore installation of passive infrared sensors connected to lighting systems to ensure that they are on only when needed.
2. Introduce a formal company-wide "switch off" campaign.
3. Introduce Energy Efficiency and Carbon Management to staff inductions and refresher toolbox talks for existing members of staff.
4. Commit to a carbon management policy and communicate to staff the aims and ambition of the policy and the role that they can play.

7.6 Scope 3 - Water

All businesses can benefit from using water efficiently. In manufacturing, water bills can cost over 1 per cent of turnover. Most businesses could halve their water bill by implementing simple and economical water minimisation measures. You could save up to 30 per cent of your water costs through simple, low-cost actions, e.g., fixing a leak from a single cold-water tap could save you up to £900 per year.

The supply and treatment of water also contributes to a company's greenhouse gas emissions with emissions related to the treatment of water being almost twice that of supply.

Water is domestic use only for the washrooms and kitchen facilities. No vehicle washing takes place.

Water consumption in 2023 was 187.43 m^3 accounted for 0.03% of the Company's carbon emissions, 0.07 tonnes CO$_2$e.

Opportunities for Improvement
1. Consider sensor taps or push taps and dual flush systems when upgrading the toilet facilities.
2. Fix any leaking pipes, toilet system and taps.

7.7 Scope 3 - Wastes

Businesses across the UK lose £ billions on wasted resources. Becoming more resource efficient can help businesses become more resilient, save money, and stay competitive. Resource efficiency brings significant environmental benefits as the country aims to become net-zero carbon by 2050.

Resource efficiency is beneficial to businesses because it can help to:

- *Save your business money.*
- *Reduce your energy and water consumption, and waste disposal.*
- *Reduce your operating costs and increase resilience-to-input cost increases.*
- *Enhance your environmental performance.*
- *Improve your business image and open up new supply chain opportunities.*
- *Assist compliance with legal requirements.*
- *Increase your carbon savings.*

Investing in resource efficiency basics such as energy efficient lighting or improving recycling processes in your business can also be a first step to adopting circular economy business practices.

The company have their own Upper Tier Waste Carriers License in place.

At the Office Premises

240ltrs bin collected by Preston Council weekly

The cleaning company removes hygiene waste and do not have a carrier's license or provide any waste paperwork.

At the Oyston Mills Storage Unit

2 skips – comingled collected by Recycling Lives on request. The company are in the process of changing their waste contractor.

The materials include

- Hardcore
- General waste
- Plastic
- COSHH waste is also put into the skip
- WEEE – no specialist contractor in place and WEEE from site would be put into the skip.

Waste Management Duty of Care :
As a producer of waste, the company is responsible for the waste it produces, even when collected by third parties on their behalf. All waste management/disposal contracts, waste transfer notes and consignment notes should be retained on file. In addition, a copy of any waste contractors Carriers Licence should be obtained and retained on file. Licences of waste contractors should be reviewed periodically.

The Duty of Care Code of Practice provides practical guidance on how to meet your waste duty of care requirements in England and Wales.

COSHH waste should be stored separately, and the business should check that their waste carriers is licensed to handle COSHH waste and provide the correct paperwork, which must be retained for 3 years.

The waste is listed as recycled in the data provided. The official carbon footprint figures do not formally hold a conversion factor for recycled. Therefore, using professional experience we have used a corresponding figure which best represents the activity, the GHG conversion factor for combustion. Any recycling related conversion factor only accounts for the collection gate through to the processing/transfer station gate. The same as combustion, therefore this is a safe assumption.

Waste streams generated and observed were:

Waste Arisings	Volume (tonnes)	Tonnes CO_2e
Waste - Commercial & Industrial (Landfill)	38.3	19.94
Waste - Paper & Board: Paper (Closed Loop)	8.12	0.17
Waste - Wood (Closed Loop)	16.1	0.34
WEEE - Mixed (Open Loop)	0.40	0.01

Table 7: Waste Data

The above waste sources and disposal routes yield 20.45 tonnes CO₂e collectively, making up 10.33% of the company's carbon footprint in 2023.

Opportunities for Improvement
1. The company should check what happens to Waste Electrical and Electronic Equipment and ensure that it is being disposed of appropriately. You would need to check that the waste contractor is licenced to take these materials and retain paperwork for 3 years.
2. The company would benefit from carrying out a strategic waste review, which would identify opportunities for further recycling.
3. Ensure that COSHH waste materials are segregated as appropriate. If any of these are classified as hazardous waste and placed in a general/recycling skip the whole skip may be classed as hazardous and company will be charged accordingly.

7.8 Scope 3 - Business Travel
Reducing your carbon footprint is a growing priority for consumers and businesses alike, and a green transport strategy is an essential part of any business' green credentials.

A green travel plan is simply a set of ways to encourage staff to travel in a more environmentally sustainable way - with no loss of business efficiency. As well as reducing your costs, it can improve the health and morale of your workforce and boost your reputation. Business Travel can represent 50% or more of an organisation's greenhouse gas emissions, and as such, seems like a good place to start if you're interested in reducing them.

There are a range of vans used for travelling to site and delivering parts. There are 53 vehicles in total

All vehicles are owned by the company.

All vehicles are classified Euro 5 and above.

A new tracking system has been installed which tracks telematics etc the company have noticed a difference since installing this.

Electric vehicles have been considered but it was felt that they would not be suitable at the moment.

Mode of Transport	Volume	Tonnes CO₂e
Grey Fleet (Land)	506,275 Miles	164.87

Table 8: Transport Data

*Assumption – one passenger

The above Business Travel modes and volumes yield 164.87 tonnes CO₂e collectively, making up 83.29% of the company's carbon footprint in 2023.

Opportunities for Improvement
1. Review or develop a company business travel policy.

2. Consider Driver Training to improve safety, skills and efficiency of company driving operations. Improving driver performance would make operations safer and more efficient, prolonging the life of company vehicles and providing economic value, environmentally and fiscally. Environmental driver training has the potential to reduce vehicle fuel consumption and wear and tear. Environmental driving essentially covers the driver-controlled functions of operating a vehicle's powertrain and support systems in a way that optimises fuel efficiency.
3. Consider developing a Company-wide travel plan, including car share, bicycle storage, shower facilities, electric vehicle and electric bicycle charging points
4. Encourage meetings to be held virtually where site visits are not necessary or mandatory.
5. Consider introducing a cycle – to – work scheme depending on number of employees interested, reduction in emissions from travel and potential savings.

7.9 Scope 3 - Staff Commute

Staff travelling to work is often an unseen or hidden carbon emission as it doesn't cost the company anything. But surprisingly staff's daily commute to work can be a significant part of the company's greenhouse gas inventory.

The number of days per year that staff travelled and worked on site was calculated based on 230 average working days in the reference period.

Staff home post codes were used to establish miles travelled to and from work using Google Maps and the shortest route used.

The conversion factors for the various diverse types and vehicle size and fuel used by staff were used.

Mode of Transport	Volume	Tonnes CO$_2$e
Small car Petrol	5437 miles	1.57
Medium Car Petrol	1646 miles	0.60
Large Car Diesel	3864 miles	1.61
Small Car Diesel	9237 miles	2.58

Table 9: Staff Commute Data

The above staff commute modes and volumes yield 6.36 tonnes CO$_2$e collectively, making up 3.21% of the company's carbon footprint in 2023.

Opportunities for Improvement
1. Consider developing a companywide Travel Policy
2. Consider introducing a carpooling scheme.
3. Introduce a bike to work scheme.
4. Consider installing shower and cycle storage facilities.
5. Offer staff driver training

7.10 Scope 3 – Purchased Goods and Services

Every product or service your business buys has an impact on the environment.

A product or service generates environmental impacts throughout its life cycle, from the raw materials and energy used to manufacture or supply it, to the way it is recycled or managed at the end of its life.

An environmentally less damaging product or service is one that doesn't harm the environment, or it harms the environment the least compared to similar products or services - in the case of a product, in the different aspects of in the production, use and disposal of that product, and in case of a service, in any aspects of the delivery of the service.

These products and services will generate less pollution or deplete fewer resources than other products or services for the same purposes. This may be due to, for example, being more energy-efficient, being made of recycled materials or materials that would otherwise be considered wastes, for making use of resources sourced locally, etc.

Your purchases also have social impacts. For example, if you buy goods or services from organisations that have good pay and working conditions, you will be making these companies more successful and so you will be supporting these good working conditions.

Sustainable purchasing is an approach to buying that focuses on reducing the impact of the goods and services you buy on the environment, human health and social conditions. This means making better choices about what you buy, how often and who you buy from, which could help you save money.

There's no legal requirement for you to purchase sustainably, or to buy sustainable goods and services, but it could help you to:

- *Reduce your impact on the environment.*
- *Address social issues and improve the livelihoods of individuals and communities.*
- *Improve your business' reputation.*
- *Save money over the life of a product or service.*

All materials are purchased per job/project which makes it difficult to calculate the figures required to include in the carbon footprint.

Materials and volumes data was not provided and as such is not included in the company's carbon footprint in 2023.

Opportunities for Improvement
1. Consider developing a companywide Sustainable Procurement Policy
2. Consider collating this information centrally in future in order that it can be incorporated into any future carbon footprint.

7.11 Scope 3 – Upstream Transportation and Distribution

Greenhouse Gas (GHG) Protocol Scope 3, Category 4 includes emissions from:
Transportation and distribution of products purchased in the reporting year, between a company's tier 1 suppliers and its own operations in vehicles not owned or operated by the reporting company (including multi-modal shipping where multiple carriers are involved in the delivery of a product, but excluding fuel and energy products)
Third-party transportation and distribution services purchased by the reporting company in the reporting year (either directly or through an intermediary), including inbound logistics, outbound logistics (e.g., of sold products), and third-party transportation and distribution between a company's own facilities. Emissions may arise from the following transportation and distribution activities throughout the value chain:

- *Air transport*
- *Rail transport*
- *Road transport*
- *Marine transport*
- *Storage of purchased products in warehouses, distribution centres, and retail facilities.*

Outbound logistics services purchased by the reporting company are categorized as upstream because they are a purchased service.
Emissions from transportation and distribution of purchased products upstream of the reporting company's tier 1 suppliers (e.g., transportation between a company's tier 2 and tier 1 suppliers) are accounted for in scope 3, category 1 (Purchased goods and services).

To calculate the GHG emissions associated with this activity we would use the Distance Based Method which involves determining the mass, distance, and mode of each shipment, then applying the appropriate mass-distance (tonne-kilometre) emission factor for the vehicle used.

All materials are purchased per job/project which makes it difficult to calculate the figures required to include in the carbon footprint.

This data was not supplied and as such has not been included in the company carbon footprint for 2023.

Opportunities for Improvement

1. Consider developing a companywide Sustainable Procurement Policy taking source location and transportation routes into account.

7.12 Scope 3 – Downstream Transportation and Distribution

This activity, (category 9 of the GHG Protocol Scope 3 Value Chain Standard) includes emissions that occur in the reporting year from transportation and distribution of sold products in vehicles and facilities not owned or controlled by the reporting company. This category also includes emissions from retail and storage.

Outbound transportation and distribution services that are purchased by the reporting company are excluded from category 9 and included in category 4 (Upstream transportation and distribution) because the reporting company purchases the service. Category 9 includes only emissions from transportation and distribution of products after the point of sale.

To calculate the GHG emissions associated with this activity we would use the Distance Based Method which involves determining the mass, distance, and mode of each shipment, then applying the appropriate mass-distance (tonne-kilometre) emission factor for the vehicle used.

All materials are purchased per job/project which makes it difficult to calculate the figures required to include in the carbon footprint.

This data was not supplied and as such has not been included in carbon footprint for 2023.

Opportunities for Improvement
1. Consider developing a companywide transportation and distribution strategy, considering alternative fuels, alternative modes of transport etc.

8.Carbon Neutrality v Net Zero
8.1 Definitions
8.1.1 Carbon Neutrality
A state of balance between the carbon dioxide (CO_2) emitted into the atmosphere and the CO_2 removed from the atmosphere.

8.1.2 Zero Carbon
No carbon emissions are being produced.

8.1.3 Carbon Negative
Reduction of the carbon footprint to less than neutral, so that there is a net effect of removing CO_2 from the atmosphere rather than adding to it.

8.1.4 Net Zero Carbon
Carbon neutrality has a minimum requirement of covering Scope 1 & 2 emissions with Scope 3 encouraged. Net Zero must cover Scope 1, 2 & 3 emissions.

8.2 Carbon Neutrality Process (based on PAS 2060)
The PAS 2060 standard was initially launched by the British Standards Institution in 2010 with the objective of increasing transparency of carbon neutrality claims by providing a common definition and recognised method of achieving carbon neutral status. It was revised in 2014 to recognise improvements in the knowledge and understanding of greenhouse gas emissions availability, particularly regarding developments in assessment, reduction and offsetting that took place following publication.

The standard specifies the requirements to be met by any organisation seeking to demonstrate carbon neutrality through the quantification, reduction, and offsetting of greenhouse gas (GHG) emissions.

Use of PAS 2060 will help organisations:

- Meet customer, stakeholder, industry, and legal expectations.

- Reduce greenhouse gas emissions and quantify their carbon footprint.

- Identify areas of inefficiency and improve overall performance.

- Make cost savings by reducing energy consumption and bills.

● Gain credibility with a consistent carbon neutrality statement.

8.2.1 Measure

The starting point for the process is to calculate the actual carbon footprint for the entity seeking to declare carbon neutrality. For most entities, the recommended methodologies are ISO 14064-1, the WBCSD/WRI Greenhouse Gas Protocol or UK Government Environmental Reporting guidelines.

Footprint measurements should include at least 95% of the total emissions, allowing for exclusion of emissions that constitute less than 1% of the total.

Emissions shall be converted into tCO_2e and include:

● Scope 1 – direct emissions from owned or controlled sources.

● Scope 2 – indirect emissions from the generation of purchased electricity, steam, heating, and cooling.

● Scope 3 – all other indirect emissions that occur in a company's value chain (waste treatment, purchasing of goods, employee travel etc.).

8.2.2 Reduce

The next step in the process is to plan to reduce these identified emissions. This involves the creation of a Carbon Management Plan that right from the outset includes a public commitment to carbon neutrality.

The plan must also include:

● A timescale for achieving carbon neutrality of the defined entity.

● Specific targets for GHG reduction that are appropriate to the overall timescale.

● The planned means of achieving and maintaining the GHG reductions including – justification of the techniques and measure to be employed – the period that any historic reductions are calculated over and that a constant counting methodology has been used.

● The offsetting strategy to be used including estimate of quantity to be offset. The plan must be updated on an annual basis. A declared reduction can be absolute or a reduction in the intensity (carbon/tonne of product). The reduction should be greater than the rate of economic growth.

8.2.3 Offset

PAS 2060 requires that the total amount of residual carbon emissions be offset to achieve the status of carbon neutrality. The organisation must identify and document the relevant standard and methodology used to achieve the carbon offset. The schemes must meet the requirements of the standard.

The following examples are in line with requirements:

Kyoto compliant

● Clean Development Mechanism (Certified Emission Reductions)

- Joint Implementation (Emission Reduction Units)

- EU Allowances

Non-Kyoto compliant (Voluntary Emission Reductions)

- Gold Standard

- Voluntary Carbon Standard

- Climate, Community and Biodiversity Standard

Other domestic schemes

- In UK – the Woodland Carbon Code

- WWF Gold Standard

- Verified Carbon Standard

Carbon credits shall have been verified by an independent third-party verifier. Credits from Carbon offset projects shall only be issued after the emission reduction associated with the offset project has taken place.

Credits from carbon offset projects shall be retired within 12 months of the date of the declaration of achievement. Credits from Carbon offset projects shall be stored in an independent and credible registry or equivalent publicly available record. Offsetting total residual emissions will allow carbon neutrality to be declared.

8.2.4 Document and Validate
The final stage of the process is the documentation, verification, and declaration of carbon neutrality. This requires a statement that the required standards have been met, supported by a "Qualifying Explanatory Statement".

To promote transparency, the standard requires public disclosure of all documentation supporting the carbon neutrality statement.

This in practice includes:

- Proof of emissions reduction

- Withdrawn offsetting credits.

- Carbon footprint report

- Carbon Management Plan

- Qualifying Explanatory Statement.

The standard permits three separate types of validation:

- Self-validation

- Validation from a non-accredited organisation

- Independent third-party validation

8.3 Carbon Net Zero (Based on the 1.5ºC Business Playbook)

The 1.5ºC Business playbook is a spin-off from the Exponential Roadmap project, aimed specifically at scaling climate action in the business sector. It is based on 4 pillars.

- Pillar 1 Reduce your own emissions.

- Pillar 2 Reduce your value chain emissions.

- Pillar 3 Integrate climate in business strategy.

- Pillar 4 Influence climate action in society

In this report the author will only focus on Pillars 1 and 2

8.3.1 Reduce your Own Emissions

To be aligned with a 1.5°C ambition, the minimum requirement is to halve your own emissions at least every 10 years. These emissions are referred to as scope 1 and 2 emissions of the Greenhouse Gas Protocol. They include emissions from in-house sources such as space heaters, vehicles, or leakage from refrigerants, and from purchased electricity, cooling and heating. It is also recommended to include emissions from business travel in pillar 1 even though they are formally part of scope 3, since they are directly controlled by the company. Due to the baseline only being conducted 2021/2022 East Lancashire Chamber of Commerce's Sustainability Team would recommend increasing the rate of decarbonisation to 50% in 8 years.

8.3.2 Key Actions

Firstly, GOS Heating Ltd, should formally map out their greenhouse gas emission points ensuring that nothing has been left out. This has not been formally done by ELCC Sustainability Team and this footprint has been conducted using common emission points based on a walk round HQ and discussions with key personnel regarding the nature of the business.

GOS Heating Ltd should make sure to include the main sources of carbon emissions and that any initiatives to mitigate these are identified.

Decide your base year. A base year is the year when reductions start and will be used as a comparison to show progress. The base year can be no more than two years back in time. Historical emissions reductions deserve acknowledgement and can be highlighted, but they cannot be a part of your next halving.

It is recommended by ELCC Sustainability Team that GOS Heating Ltd set 2023 as the base year.

Set a target within three months of making your commitment and decide on the target year. Your minimum goal should be to halve emissions every ten years, but preferably faster.

Halving in ten years means a 7% year-on-year reduction. Halving in five years will mean 13% emissions reductions and halving in three years will mean a 20% annual emissions reduction rate. Break down your plans into yearly targets and milestones.

Decide in which order to eliminate emissions and develop a plan on how to reach the targets. Start immediately with the "low-hanging fruit" which are economically attractive, bring other co-benefits and create positive momentum in the organisation.

Disclose GOS Heating Ltd carbon emissions, the plans to reduce them and emissions reductions as part of the public reporting annually. Making sure to clearly explain any slower pace than halving every decade.

Evaluate results, take corrective actions, and update the carbon reduction plan on a yearly basis.

8.3.3 Reduce your Value Chain Emissions

Value chain emissions include all the emissions "outside the company walls". They normally represent the largest share of a company's total footprint and must therefore be addressed.

Value chain emissions are emissions from upstream (e.g., supplier activities) and downstream (e.g., use of sold products) activities associated with the operations of GOS Heating Ltd and are referred to as scope 3 emissions in the Greenhouse Gas Protocol.

Upstream activities include emissions all the way to raw material extraction and downstream activities including customer final use and end-of-life. The largest emission sources in this category tend to be purchased goods and services and the use of sold products, but proportions vary between sectors and companies. GOS Heating Ltd should work actively to drive down value chain emissions. This can be done in many ways – examples include procurement guidelines and supplier code of conduct criteria, changes in the design of products, collaborations with suppliers and customers, and by reassessing your business model and investments.

8.3.4 Key Actions

Like 8.3.1 above working with suppliers and business partners map out the carbon emissions associated with GOS Heating Ltd value chain to understand which are the most substantial and start tracking them systematically. Strive to include all emission categories which exceed 1% of total emissions.

Within the first year, set a target for the first halving of absolute value chain emissions. Applying the same baseline year as for Company Name own emissions (scopes 1 & 2). The minimum goal to align with 1.5°C should be to halve every ten years (7% year-on-year reduction), but preferably faster. Break the plan down into yearly targets and milestones.

Decide in which order to reduce carbon emissions, based on a ROI analysis, and develop a plan on how to reach the targets.

Disclose value chain emissions and plans to reduce them as part of your public reporting annually. Clearly explain any slower pace than halving every decade.

Evaluate results and update your targets, if necessary, on a yearly basis.

9. Low Carbon Technologies

Technology / Process	Relevance
Transport & Logistics	
Driver Training: Training to improve safety, skills and efficiency of company driving operations.	Improving driver performance would make operations safer and more efficient, prolonging the life of company vehicles and providing economic value, environmentally and fiscally.

Table 10: Low Carbon Technologies and Practices

10.Suggested Carbon Reduction Plan

Item	Activity	Priority	Who	When
	Heating			
1	Review the current thermostat settings and look to turn them down at least one degree Celsius and educate staff.	B		2024
2	Update staff inductions and toolbox talks to include Energy Efficiency and Carbon Management.	B		2024
3	Ensure staff understand not to have the windows open when the air con is in operation.	A		2024
	Cooling			
4	Review the current maintenance arrangements are adequate and ensure that engineers working on AC and refrigeration units are suitable qualified to do so.	A		2024
	Processes			
5	Efficient resource management is a key aspect of sustainability. This involves minimising waste generation, optimising resource use, and recycling materials whenever possible. A waste and resources audit could be carried out to identify areas for improvement	A		2024
6	Reduce your transport emissions by sourcing materials locally and where possible consolidate supplies to reduce the number of journeys required	A		2024
7	Setting sustainability targets for the business and regularly measuring your performance against them is a good way to motivate staff to follow green initiatives and boost your reputation as a responsible organisation.	A		2024
	Electricity			
8	Explore installation of passive infrared sensors connected to lighting systems to ensure that they are on only when needed.	A		2024
9	Introduce a formal company-wide "switch off" campaign.	A		2024
10	Introduce Energy Efficiency and Carbon Management to staff inductions and refresher toolbox talks for existing members of staff.	A		2024
11	Commit to a carbon management policy and communicate to staff the aims and ambition of the policy and the role that they can play.	A		2024
	Water			
12	Consider sensor taps or push taps when upgrading the toilet facilities.	B		2024
13	Fix any leaking pipes, toilet system and taps.	A		2024
	Wastes			

14	The company should check what happens to Waste Electrical and Electronic Equipment and ensure that it is being disposed of appropriately. You would need to check that the waste contractor is licenced to take these materials and retain paperwork for 3 years.	A		2024
15	The company would benefit from carrying out a strategic waste and resources review, which would identify opportunities for further recycling.	A		2024
16	Ensure that COSHH waste materials are segregated as appropriate. If any of these are classified as hazardous waste and placed in a general/recycling skip the whole skip may be classed as hazardous and company will be charged accordingly.	A		2024
	Business Travel			
17	Review or develop a company business travel policy.	A		2024
18	Consider Driver Training to improve safety, skills and efficiency of company driving operations. Improving driver performance would make operations safer and more efficient, prolonging the life of company vehicles and providing economic value, environmentally and fiscally. Environmental driver training has the potential to reduce vehicle fuel consumption and wear and tear. Environmental driving essentially covers the driver-controlled functions of operating a vehicle's powertrain and support systems in a way that optimises fuel efficiency.	B		2024
19	Consider developing a Company-wide travel plan, including car share, bicycle storage, shower facilities, electric vehicle and electric bicycle charging points	C		2024
20	Encourage meetings to be held virtually where site visits are not necessary or mandatory.	B		2024
21	Consider introducing a cycle – to – work scheme depending on number of employees interested, reduction in emissions from travel and potential savings.	C		2024
	Staff Commute			
22	Consider developing a companywide Travel Policy	B		2024
23	Consider introducing a carpooling scheme.	C		2024
24	Consider installing shower and cycle storage facilities	C		2024
25	Offer staff driver training	B		2024
	Purchased good and service			
26	Consider developing a companywide Sustainable Procurement Policy	A		2024
27	Consider collating this information centrally in future in order that it can be incorporated into any future carbon footprint.	B		2024
	Upstream Transportation and Distribution			

28	Consider developing a companywide Sustainable Procurement Policy taking source location and transportation routes into account.	B		2024
	Downstream Transportation and Distribution			
29	Consider developing a companywide transportation and distribution strategy, considering alternative fuels, alternative modes of transport etc.	B		2024
	Miscellaneous			
30	Establish a "Green Team" across the Company – with a view to suggesting ideas and implementing the carbon reduction plan	B		2024
31	Ensure that all carbon emission sources have been identified	A		2024
32	Commit to a carbon management policy	A		2024
33	Review the current purchasing/procurement policy – are AAA rated electrical equipment preferred. Is whole life cost considered when procuring goods and services?	B		2024
34	Repeat the carbon footprint once all GHG emission points have been identified.	B		2025

Table 11: Suggested Action Plan

11. Evidence Trail

Table 12 below shows the document and evidence used for the compilation of the GOS Heating Ltd Greenhouse Gas Inventory.

11.1   GOS Heating Ltd Evidence List 2023 Carbon Footprint – GH23003

	Document Name	Type of Doc
GH22001	GOS Heating Ltd Carbon Footprint Report	PDF
GH22002	Crib Sheet – 2023 CO_2e Calculations	Excel
GH22003	GOS Heating Ltd Evidence List 2023 Carbon Footprint	Word
GH22004	Aggregated Uncertainty Calculation 2023	Excel
GH22005	Scope 1 and 2 Data	Various
GH22006	Waste Data	Various
GH22007	Water Supply Data	Various
GH22008	Business Travel Data	Various
GH22009	Staff Commute Data	Excel

Table 12: GOS Heating Ltd Carbon Footprint Document Trail

12. References

Environmental Reporting Guidelines including SECR and GHG	Guidance to help companies comply with the Streamlined Energy and Carbon Reporting regulations, including greenhouse gas (GHG) reporting. https://assets.publishing.service.gov.uk/media/5de6acc4e5274a65dc12a33a/Env-reporting-guidance_inc_SECR_31March.pdf
Greenhouse Gas Reporting: Conversion Factors	These are produced annually by the Department for Energy security and Net Zero https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023
The Greenhouse Gas Protocol	World Resources Institute GHG Protocol – A corporate accounting and reporting standard, 2015 http://www.ghgprotocol.org/corporate-standard
Procurement Policy Note 06/21	Guidance: Procurement Policy Note 06/21: Taking account of Carbon Reduction Plans in the procurement of major government contracts. https://www.gov.uk/government/publications/procurement-policy-note-0621-taking-account-of-carbon-reduction-plans-in-the-procurement-of-major-government-contracts
ISO14001	ISO14001 international standard for corporate environmental management systems. https://www.iso.org/iso-14001-environmental-management.html
ISO14064-1	ISO14064 international standard for corporate emissions reporting. https://www.iso.org/standard/66453.html

Table 13: References

Appendix 1 - Glossary of Terms

Term	Explanation
Biogenic Carbon	Biogenic carbon is the emissions related to the natural carbon cycle, as well as those resulting from the combustion, harvest, digestion, fermentation, decomposition, or processing of biologically based materials.
Carbon Dioxide (CO_2)	The most important *greenhouse gas (GHG)*. CO_2 emissions result from the combustion of fuel, from land use changes and from some industrial processes. CO_2 emissions are limited by the Kyoto protocol.
Carbon Dioxide Equivalent (CO_2e)	There are six main *greenhouse gases (GHG)* which cause climate change and are limited by the Kyoto protocol. Each gas has a different global warming potential. For simplicity of reporting, the mass of each gas emitted is commonly translated into carbon dioxide equivalent (CO_2e) amount so that the total impact from all sources can be summed to one figure.
Carbon Footprint	The total set of greenhouse gas emissions caused by an individual or organisation, event, or product.
DEFRA	The Department for Environment, Food and Rural Affairs is the UK government department responsible for overseeing policy, legislation, and performance within the UK.
DESNZ	The Department for Energy Security and Net Zero (DESNZ) is focused on the energy portfolio from the former Department for Business, Energy and Industrial Strategy (BEIS).
De minimis	*De minimis* is a Latin expression meaning about minimal things. It refers to carbon emissions which are in very small quantities, usually lower than 1% of the overall total
Direct Emissions	Direct emissions will result from combustion of fuels which produce CO_2 emissions. Examples of direct emissions are company car business miles.
Excluded Emissions	Excluded emissions are those emissions which are neither included in the main footprint nor classed as de minimis. Emissions are excluded because they are not legitimately part of the company footprint and are outside the scope of the organisation's footprint in line with relevant guidance.
Green House Gases (GHG)	Greenhouse Gases are those which contribute to the greenhouse effect when present in the atmosphere. Six greenhouse gases are regulated by the Kyoto Protocol, as they are emitted in significant quantities by human activities and contribute to climate change. The six regulated gases are *Carbon dioxide (CO_2)*, Methane (CH_4), Nitrous oxide (N_2O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs) and Sulphur hexafluoride (SF6).
Indirect Emissions	Each product or service that is purchased by an organisation is responsible for emissions. By purchasing the (for example) electricity it is indirectly responsible for the release of CO_2.

ISO14064-1	ISO 14064 is an international standard for corporate emissions reporting. It builds on the approach outlined in the Greenhouse Gas Protocol.
ISO14001	ISO 14001 is an international standard for corporate environmental management systems. FM Conway has voluntarily implemented an Environmental Management System (EMS) in conformance with the ISO 14001:2004 standard.
Verification	The process of independent third party checking of a carbon footprint calculation and statement by the third party that the results are accurate

Table 14 Glossary

Appendix 2 – Uncertainty Data Matrix

Carbon Reporting Aggregated Uncertainty Tool Matrix

TABLE 1 : ASSUMED ESTIMATION OF UNCERTAINTY (BASED UPON IPCC GUIDANCE)

Estimate of uncertianty of activity data only against the defined methodology

Emissions Source	Best Attainable Uncertainty to Stated Methodology Ranking	Estimated Uncertainty
Diesel and Petrol Fuels	High - Litres purchased measured at site upon delivery or complete fuel card data	+/- 5%
	Good - Litres purchased provided by supplier invoice or complete fuel card data	+/-15%
	Fair - Litres purchased provided by supplier or fuel card with some data missing	+/-30%
	Poor - Litres purchased provided by supplier or fuel card with significant data missing	+/-50%
Electricity, and Water	High - if actual Meter reading used for all sites or third party broker and bill validation used	+/- 5%
	Good - if based on complete data for the reporting period from supplier invoices with actual meter readings	+/-15%
	Fair - if based on complete data for the reporting period from supplier invoices with adjustments for actual meter readings	+/-30%
	Poor - if based on incomplete data sets	+/-50%
Staff Commute	High - mode of transport recorded, miles recorded for every journey via odometer with actual attendance data	+/- 5%
	Good - miles estimated and recorded for every journey via multimap, Google Maps or equivalent, mode of transport and with actual attendance	+/-15%
	Fair - miles estimated and recorded for every journey via multimap, Google Maps or equivalent, mode of transport and with calculated attendance based on average working days, holidays and sickness	+/-30%
	Poor - Not all miles journeys recorded (incomplete data sets)	+/-50%
Waste	High - If all waste streams source segregated and treatment/disposal route transparent and transport responsibility known	+/- 5%
	Good - If most waste streams source segregated and treatment/disposal route transparent and transport responsibility known	+/-15%
	Fair - If most waste streams source segregated but not all treatment/disposal routes transparent and transport responsibility stimated	+/-30%
	Poor if waste is poorly managed on site and not all treatment/disposal routes transparent	+/-50%

Figure 1: Aggregated Uncertainty Tool Data Matrix

Appendix 3 – GH22002 Data Crib Sheet

2023

	Scope	Volume	Units	GHG Conversion Factor	kgs CO₂e	T&D Losses GHG Conversion Factor	kgs CO₂e	WTT GHG Conversion Factor	kgs CO₂e	T&D Losses WTT GHG Conversion Factor	kgs CO₂e	Total kgs CO₂e	kgs CO₂e	Tonnes CO₂e	Outside of Scopes GHG Conversion Factor	Tonnes CO₂e	kgs CO₂e Outside of Scopes	Tonnes CO₂e Outside of Scopes	%
Cars Class I (up to 1.305 tonnes) Diesel	1		miles	0.18293	0.00			0.03021	0.00			0.00		0.00		0.00			0.00%
Cars Class II (1.305 to 1.74 tonnes) Diesel	1	180,764	miles	0.22875	41,349.58			0.05572	10,072.17			51,421.75		51.42					25.97%
Cars Class III (1.74 to 3.5 tonnes) Diesel	1	325,511	miles	0.28013	91,185.07			0.06839	22,261.70			113,446.76		113.45					57.31%
Cars Average (up to 3.5 tonnes) Diesel	1		miles	0.40792	0.00			0.09989	0.00			0.00		0.00					0.00%
Cars Class I (up to 1.305 tonnes) Petrol	1		miles	0.37224	0.00			0.09108	0.00			0.00		0.00					0.00%
Cars Class II (up to 1.305 to 1.74 tonnes) Petrol	1		miles	0.29318	0.00			0.08143	0.00			0.00		0.00					0.00%
Cars Class III (1.74 to 3.5 tonnes) Petrol	1		miles	0.31534	0.00			0.08760	0.00			0.00		0.00					0.00%
Cars Average (up to 3.5 tonnes) Petrol	1		miles	0.32400	0.00			0.09003	0.00			0.00		0.00					0.00%
Electricity	2	22,576	kWh	0.20707	4,674.91	0.01792	404.45	0.04590	1,036.24	0.00397	89.63	6,205.23		6.21	0.1151		2,597.80	2.60	3.13%
Water Supply	3	187.43	m³	0.17668	33.12							33.12		0.03					0.02%
Water Treatment	3	179	m³	0.20132	35.95							35.95		0.04					0.02%
Waste – Commercial & Industrial (Combustion)	3		tonnes	21.28081	0.00							0.00		0.00					0.00%
Waste – Commercial & Industrial (Landfill)	3	38.3	tonnes	520.33474	19,939.23							19,939.23		19.94					10.07%
Waste – Paper & Board: Board (Closed Loop)	3		tonnes	21.28081	0.00							0.00		0.00					0.00%
Waste – Paper & Board: Paper (Closed Loop)	3	8.12	tonnes	21.28081	172.80							172.80		0.17					0.09%
Waste – Paper & Board: Mixed (Closed Loop)	3		tonnes	21.28081	0.00							0.00		0.00					0.00%
Waste – Hazardous Assorted – Treatment	3		tonnes	21.28081	0.00							0.00		0.00					0.00%
Waste – Wood (Combustion)	3	16.1	tonnes	21.28081	343.47							343.47		0.34					0.17%
Waste – Mixed (Open Loop)	3	0.40	tonnes	21.28081	8.51							8.51		0.01					0.00%
WEEE – Scrap metal (Closed Loop)	3		tonnes	21.28081	0.00							0.00		0.00					0.00%
Staff Commute – Petrol Small (<1.4 l)	3	5,437	miles	0.22551	1,226.14			0.06288	341.89			1,568.03		1.57					0.79%
Staff Commute – Petrol Medium (1.4 – 2.0 l)	3	1,656	miles	0.28567	473.07			0.07965	131.90			604.97		0.60					0.31%
Staff Commute – Diesel Small (<1.7 l)	3	9,237	miles	0.22420	2,070.85			0.05460	504.33			2,575.18		2.58					1.30%
Staff Commute – Diesel Medium (1.7 – 2.0 l)	3	0	miles	0.26902	0.00			0.06564	0.00			0.00		0.00					0.00%
Staff Commute – Diesel Large (>2.0 l)	3	3,864	miles	0.33570	1,297.13			0.08208	317.16			1,614.29		1.61					0.82%
Scope 3 Only					25,600.27		404.45		34,665.38		89.63	197,969.28		197.97			2,597.80	2.60	100.00%

	Scope 1	132.53
	Scope 2	4.67
	Scope 3	60.76
		197.97

	kWh	GHG Conversion Factor	kgs CO₂e	T&D Losses GHG Conversion Factor	kgs CO₂e	WTT GHG Conversion Factor	kgs CO₂e	Total kgs CO₂e	Tonnes CO₂e	Outside of Scopes GHG Conversion Factor	kgs CO₂e Outside of Scopes	Tonnes CO₂e Outside of Scopes
Electricity Generation PV	3,495	0.207074289	723.72	0.0179151	62.61	0.00397	13.88	960.63	0.96	0.12	402.17	0.40

GHG Emissions Avoided

	2023	Tonnes CO₂e	Tonnes per
		197.97	#DIV/0!
Head Count (FTE)		197.97	#DIV/0!
Turnover (£m)		197.97	#DIV/0!
Tonnes of Product			

Figure 2 Data Crib Sheet

Appendix 4 – Example Carbon Management Policy

Introduction
The Company recognises that because of its activities there are associated greenhouse gases emissions from energy use, waste management services, procurement, travel, estate management and other activities and services. The UK Climate Change Act 2008 (2050 Target Amendment) Order 2019 commits the UK to a net zero target of carbon emissions by 2050.

Objectives
The Company will:
- Develop a systematic, auditable Carbon Management plan which will be made publicly available.
- Monitor, review and report annually on the Carbon management plan.
- Ensure continual compliance with energy related legislation, requirements, and corporate commitments.
- Ensure any new development contributes to the Carbon Management Policy
- Implement a programme of improvements to building fabric, services, and controls to maximise energy efficiency, as appropriate.
- Regularly monitor and review energy consumption against our reduction targets
- Ensure the necessary resources are made available to achieve these goals, cost effectively.
- Manage emissions from waste, water, transport, products, and services, via our Environmental Management System.
- Develop behaviour change programmes to promote an energy aware culture.
- Communicate progress regularly.

Responsibility
The responsibility for continual improvement in the management and reduction of energy consumption and carbon emissions lies with the Chief Executive and staff. The Chief Executive has the responsibility for keeping the company advised of energy consumption and carbon emission issues (e.g., publication of relevant advice or reports).
The Chief Executive has the responsibility for formulating appropriate plans to meet the Authority's energy consumption and carbon emission objectives.
All members of senior management will be responsible for ensuring that the objectives and action plans applicable to their areas of responsibility are followed appropriately.
Managers have the responsibility for maintaining an awareness of good practices in their own area of operations and ensuring that these are followed appropriately. Managers will be assisted by staff reporting to them.
All staff will be encouraged to support objectives of continual improvement in the overall carbon management objectives for the company.

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