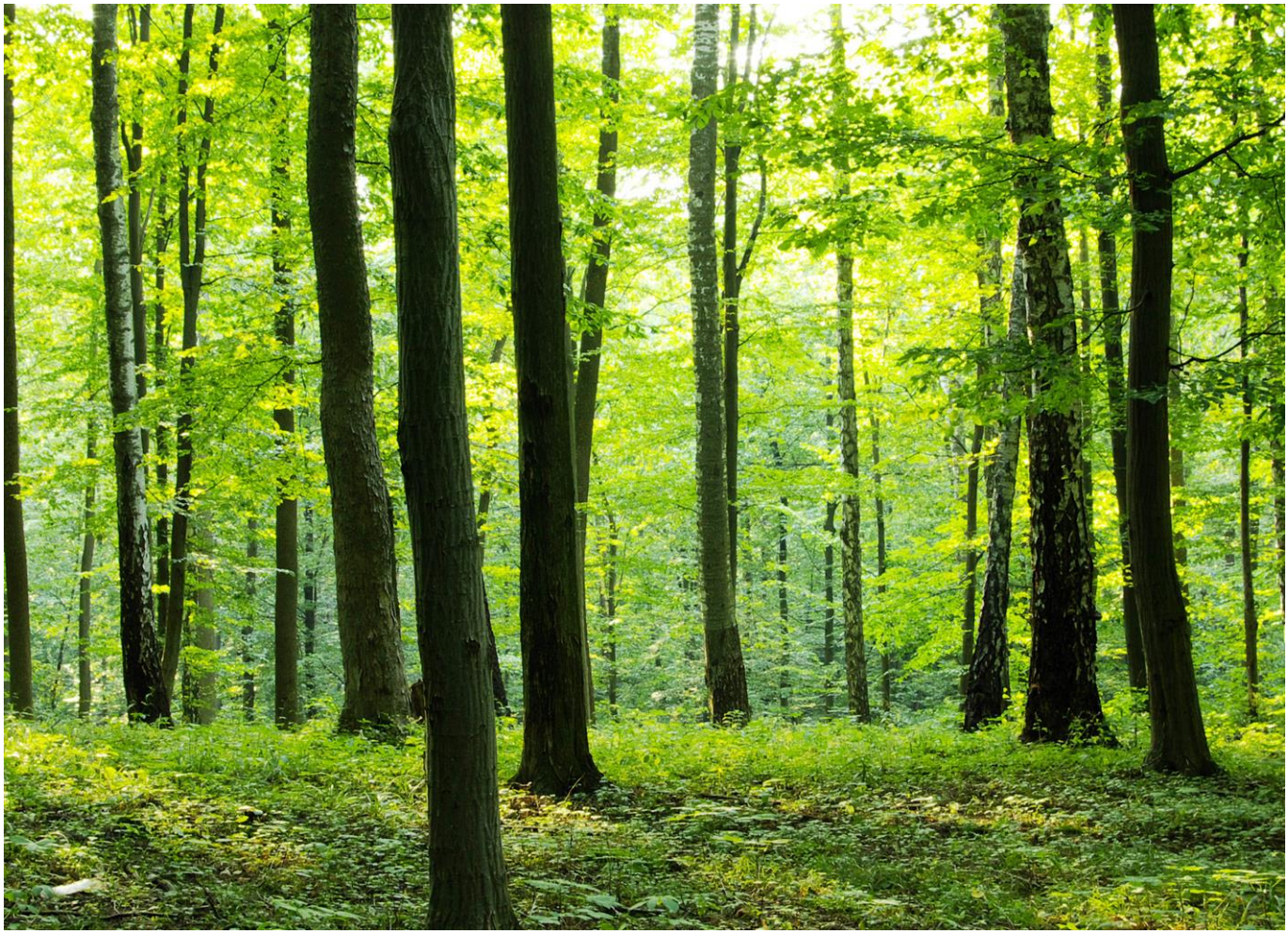


Shred Station Limited

2020 Greenhouse Gas Assessment

On behalf of Natural Capital Partners

713666R01

16TH JUNE 2021

RSK GENERAL NOTES

Project No.: 713666R01

Title: 2020 Greenhouse Gas Assessment for Shred Station Limited

Client: Natural Capital Partners

Date: 16th June 2021

Status: Final

Author	Joe Norton	**Technical Reviewer**	Jamie Blunden
	Principal Consultant		Consultant
			
Date:	16th June 2021	**Date:**	16th June 2021

Quality Reviewer Lorna Hurst

Principal Consultant

Date: 16th June 2021

CONTENTS

TABLES

FIGURES

1 CARBONNEUTRAL® CERTIFICATION SUMMARY

1.1 CarbonNeutral® Company

Table 1 displays the CarbonNeutral® certification scope and emissions to be offset.

Table 1: CarbonNeutral® Company certification summary

Organisation:				**Shred Station Limited**	
CarbonNeutral® certification:				**CarbonNeutral® Company**	
Reporting period:				**1st January 2020 to 31st December 2020**	
Consolidation approach:				**Operational control**	
Scope	**Emissions source category**		**Required or recommended**	**Included ?**	**tCO_2e**
1	Direct emissions from owned, leased or directly controlled stationary sources that use fossil fuels or emit fugitive gases		Required	X	--
	Direct emissions from owned, leased or directly controlled mobile sources		Required	✓	1,529.8
2	Emissions from the generation of purchased electricity, heat, steam, or cooling	Location-based	Required	✓	153.5
		Market-based			228.8
3	Purchased goods and services	Water supplied to subject	Recommended	✓	0.4
		Consumable supplies (paper)	Recommended	X	--
	Capital goods	Printers, laptops, computers, etc.	Recommended	X	--
	Fuel and energy related activities	Upstream emissions from purchased electricity and fuels	Recommended	X	--
		Transmission and distribution (T&D) losses	Required	✓	13.2
	Upstream transportation and distribution	Outbound courier deliveries of packages	Recommended	X	--
		Third-party transportation and storage of inbound production-related goods	Recommended	X	--
		Third-party transportation and storage of sold products	Required	N/A	--

Organisation:			**Shred Station Limited**		
CarbonNeutral® certification:			**CarbonNeutral® Company**		
Reporting period:			**1st January 2020 to 31st December 2020**		
Consolidation approach:			**Operational control**		
Scope	**Emissions source category**		**Required or recommended**	**Included ?**	**tCO_2e**
	Waste generated in operations	Wastewater	Recommended	✓	0.7
		Other waste	Required	✓	0.1
	Business travel	All transport by air, public transport, rented/leased vehicle, and taxi	Required	✓	25.3
		Emissions from hotel accommodation	Recommended	X	--
	Employee commuting		Recommended	X	--
	Homeworking		Required	✓	1.4
Overall compliance: location-based scope 2				✓	**1,724.4**
Overall compliance: market-based scope 2				✓	**1,799.7**
Overall compliance: market-based scope 2 – minus fleet emissions				✓	**279.7**
Total for offset (tCO_2e)					**280**

1.2 CarbonNeutral® Fleet

Table 2 displays the CarbonNeutral® certification scope and emissions to be offset:

Table 2 CarbonNeutral® Fleet Certification Summary

Organisation:	**Shred Station Limited**		
CarbonNeutral® certification:	**CarbonNeutral® Fleet**		
Reporting period:	**1st January 2019 to 31st December 2019**		
Consolidation approach:	**Operational control**		
Emissions Source Category	**Required or Recommended**	**Included?**	**tCO_2e**
All direct emissions from mobile sources used to deliver the activity	Required	✓	1,520.1
Emissions from consumption of purchased electricity (including transmission losses) and/or steam used to deliver the activity	Required	N/A	--
Overall compliance		✓	**1,520.1**
Total for offset (tCO_2e)			**1,521**

2 CONTEXT

2.1 Why measure greenhouse gas emissions?

Greenhouse gas (GHG) emissions assessments quantify the total GHGs produced directly and indirectly from a business or organisation's activities. GHG assessments may also be conducted for products or services. Also known as a “carbon footprint”, a GHG assessment is an essential tool in the process of monitoring and reducing an organisation's climate change impact as it allows reduction targets to be set and action plans formulated.

GHG assessment results can also allow organisations to be transparent about their climate change impacts through reporting of GHG emissions to customers, shareholders, employees, and other stakeholders. Regular assessments allow clients to track their progress in achieving reductions over time and provide evidence to support green claims in external marketing initiatives such as product labelling or Corporate Social Responsibility (CSR) reporting.

2.2 The Kyoto Protocol GHGs

GHG assessments quantify the Kyoto Protocol greenhouse gases, as applicable, and are measured in terms of tonnes carbon dioxide (CO_2) equivalence, or tCO_2e, where equivalence means having the same warming effect as CO_2 over 100 years.

The six Kyoto Protocol gas groups are CO_2, methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), sulphur hexafluoride (SF_6) and perfluorocarbons (PFCs). The global warming potential (GWP) of each is presented in Table 2.

Table 2 : Kyoto Protocol GHGs and their global warming potential (GWP)

Greenhouse gas/group	Chemical formula	GWP (CO_2e)
Carbon dioxide	CO_2	1
Methane	CH_4	25
Nitrous oxide	N_2O	298
Hydrofluorocarbons	HFCs	Depends on specific gas
Sulphur hexafluoride	SF_6	22,800
Perfluorocarbons	PFCs	Depends on specific gas

2.3 Calculating emissions

GHG assessments use client-supplied activity data (e.g. kWh of electricity or litres of fuel used), from which GHG emissions estimates are quantified by applying the most relevant emission factor(s) from published reputable sources (e.g. Defra, the UK's Department for Environment, Food and Rural Affairs).

An emission factor is a representative value that relates the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant. Emission factors are typically available from government publications, independent agencies, and scientific research journals; however, the quality and accuracy of such factors can vary significantly. Factors can differ depending on the research body and/or underlying methodologies applied. It is therefore good practice to apply emission factors only from reputable sources, such as Defra.

2.4 Reporting standards

GHG assessments are generally carried out in accordance with one of two recognised standards for accounting and reporting corporate GHG emissions. The best-known is the *"Greenhouse Gas Protocol Corporate Accounting and Reporting Standard"* (GHG Protocol, 2011) developed in a partnership of the World Business Council for Sustainable Development (WBCSD) and the World Resource Institute (WRI).

The International Organization for Standardization (ISO) also produced the *ISO14064*[1] specification series, detailing specification and guidance for the organisation and project levels, as well as for the validation and verification of emissions.

The CarbonNeutral® Protocol developed by Natural Capital Partners (NCP) is an additional layer on top of the GHG Protocol and describes the requirements for achieving specific CarbonNeutral® compliant certifications (i.e. CarbonNeutral® 'Company', 'Product', 'Event', etc.).

2.5 Emissions scopes

The aforementioned standards break down emission sources into three distinct categories, known as 'scopes'.

2.5.1 Scope 1

Scope 1 accounts for direct emissions released from sources that are owned or controlled by the reporting company (such as corporate car fleets, power generation facilities, fuel combustion for heating and power, refrigerant gas losses and where applicable process emissions).

[1] 'ISO 14064 – Greenhouse gases — Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals'

2.5.2 Scope 2

Scope 2 accounts for indirect emissions associated with off-site generation of purchased electricity, heat and steam and cooling.

In 2015, the GHG Protocol published its Scope 2 Guidance, an amendment to the Corporate Standard. These guidelines state that any operations in markets providing product- or supplier-specific data in the form of contractual instruments shall report scope 2 emissions in two ways: one based on the location-based method, and one based on the market-based method, with each result labelled according to the respective method. This is also termed 'dual reporting'.

2.5.2.1 Location-based reporting

The location-based method reflects the average emissions intensity of grids on which energy consumption occurs. This method applies to all locations where grids are used for the distribution of energy, and where electricity demand causes the need for energy generation and distribution. Grid-average emission factors are used, which are based on statistical emissions information and electricity output, aggregated, and averaged within a defined geographic boundary and a defined time frame. This includes regional / sub-national grid averages and national production grid averages.

2.5.2.2 Market-based reporting

The market-based method reflects proportional emissions from specific electricity tariffs that companies actively select in the market. Under this method of scope 2 accounting, an energy consumer uses the emissions factor associated with the qualifying contractual instruments it owns. Markets differ as to what contractual instruments are commonly available or used by companies to purchase energy or claim its specific attributes, but can include Energy Attribute Certificates (RECs, GOs, I-RECs), Power Purchase Agreements (PPAs) and green electricity products purchased from energy suppliers.

As per The CarbonNeutral® Protocol, zero emissions may only be awarded when double-counting is avoided. Any businesses seeking to make a scope 2 reporting declaration in support of CarbonNeutral® certification must complete and sign a disclosure form provided by NCP, which outlines the contractual instrument(s) purchased, the total consumption covered (MWh), and the reporting period it applies to.

If a company either does not have any such contracts or its instruments do not meet the quality criteria, then a residual mix factor is applied representing the untracked or unclaimed energy and emissions for that region. If the residual mix is not available, then the location-based method is applied, utilising either regional / sub-national grid averages or national grid averages. In this case, the reported market-based scope 2 total will be the same as the location-based total.

2.5.3 Scope 3

Scope 3 includes all other indirect emissions sources not accounted for within scopes 1 and 2. This depends on the company's activities but might include business travel, staff commuting, water consumption, waste disposal, or outsourced activities such as deliveries.

The GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (WRI and WBCSD, 2011) groups scope 3 emissions into 15 distinct categories to provide companies with a framework to organise, understand and report their emissions from wider upstream and downstream impacts.

The GHG Protocol describes the quantification of scopes 1 and 2 as mandatory, whereas scope 3 emissions are optional. However, the CarbonNeutral® Protocol requires inclusion of certain scope 3 emissions (typically waste and business travel) depending on the certification targeted. Other scope 3 sources may be included at the discretion of the client.

Depending on the nature and remit of an organisation, scope 3 activities can contribute a significant proportion of overall emissions. To gain a proper understanding of an organisation's GHG emissions it is thus advisable to include all relevant sources.

2.6 Measuring climate impacts from aviation

From 2014, it is a requirement of The CarbonNeutral® Protocol that clients consider the evidence regarding the overall effect of aviation on climate, aside from simply GHG emissions released during combustion of jet fuel including, but not limited to, soot particles and aviation induced clouds. Having considered the evidence, clients may elect to calculate their aviation carbon impact by considering only GHG emissions with a small uplift to account for the wider impacts of aviation (an Aviation Impact Factor (AIF) of 1.2), or alternatively may elect to address the full wider effects of aviation by applying an Aviation Impact Factor (AIF) of 2.

2.7 Homeworking emissions

For the 2020 reporting period, office working was drastically reduced for many companies as many employees began working from home. Thus, from 2020 onwards, homeworking emissions must be included within CN Company assessments as a required emissions source. However, it is anticipated that it is not realistic to expect that this data is widely available. With this in mind, RSK has devised a benchmark which is premised upon what is thought to be an average homeworking day (accounting for the use of assets such as a laptop, monitor, air-conditioning and heating, etc.).

To calculate homeworking emissions, contracted homeworking, and homeworking due to COVID 19 must be considered. With regard to the former, the number of contracted homeworkers is simply multiplied by 240 (assumed annual working days) to provide the total number of homeworking days. This number is then multiplied again by the benchmarked emission factor which RSK has produced (as described above).

*Homeworking days = home-based location FTEs * 240*

With regard to homeworking as a result of COVID 19, emissions are estimated by calculating the average percentage of time that an employee is at home (i.e. not in the

office) and then multiplying this by the total number of working days per year. This number is then multiplied again by the benchmarked emission factor which RSK has produced (as described above).

*Homeworking days = office-based FTEs * (1 - percentage of office occupancy) *240*

2.8 GHG accounting principles

RSK's approach to carbon accounting is to follow the GHG Protocol's core principles where possible:

- Relevance: selecting an appropriate inventory boundary that reflects the GHG activities of the company and serves the decision-making needs of users.
- Completeness: accounting for all emission sources within the chosen inventory boundary, with any specific exclusions disclosed and justified.
- Consistency: aiming to collect meaningful and consistent data over time whilst transparently documenting any significant changes to data quality and/or format.
- Transparency: addressing all relevant issues in a coherent and clear manner.
- Accuracy: minimising uncertainty and avoiding systematic over- or under-quantification of emissions, and ensuring any necessary estimates or assumptions required are conservative and guided by industry standards.

2.9 Data quality and accuracy

The accuracy of a GHG assessment is directly related to the quality of the activity data provided. Primary data should always be used where available, which denotes actual activities which occurred during the reporting period (i.e. kWh of electricity consumed via invoice). It is accepted that secondary data (such as estimates, extrapolations, benchmarks, and proxy data such as distance travelled) may be used when primary data is not available. Assessments based largely on secondary data should only be viewed as an estimate of GHG emissions impact, and actual emissions may vary significantly. Clients should aim to improve the proportion of primary data over time.

3 METHODOLOGY

3.1 Introduction

This GHG assessment has been prepared by RSK, on behalf of NCP, to estimate GHG emissions associated with the operations of Shred Station Limited during the reporting period 1st January 2020 to 31st December 2020. Shred Station Limited is the UK's largest independent provider of secure confidential waste destruction and disposal services and employed 114 full-time equivalent (FTE) staff across three sites (Norwich, Harlow and Denton), including a number of home workers and fleet drivers.

Table 3 displays a breakdown of the office locations assessed within this report:

Table 3: Office locations

Office Name, Location	Floor Area (m^2)	Staff
Norwich	4,267	23
Harlow	3,048	4
Denton	4,145	1
Home workers	--	5
Drivers and drivers' mates	--	81
Total	**11,460**	**114**

3.2 Approach

On project commencement, RSK completed a quality assurance form to review all activity data provided by the client, with conservative assumptions proposed where necessary to ensure a best practice approach was adhered to.

GHG emissions were then quantified by applying the most relevant emission factors. GHG emission factors relating to the 2020 reporting year are predominantly sourced from the Defra and BEIS 2020 *UK Government GHG Conversion Factors for Company Reporting* (July 2020). See **Appendix A** for details of all GHG emissions factors used in this assessment.

3.3 Operational boundary and data quality

Table 4 displays the operational boundary applied for this assessment along with an overview of the quality of data provided by the client. The total quantity of primary data used for this assessment amounts to 99.4%.

Table 4: Operational boundary and data quality

Scope	Emissions source	Requirement	Data provided and quality	Suggested action
1	Refrigerant gas losses	Required	< Primary data provided in terms of zero losses recorded at all sites where air conditioning is installed	
	Stationary sources	Required	< Not applicable	N/A
	Mobile sources	Required	< Primary data provided in terms of diesel used in litres	
2	Electricity consumption	Required	< Primary data provided in terms of kWh of energy consumed	
3	Water	Recommended	< Primary data provided in terms of water consumed	
	T&D losses[2]	Required	< See electricity consumption	N/A
	Upstream electricity (WTT[3])	Recommended		
	Wastewater	Recommended	< Primary data provided in terms of water discharged to sewers	
	Waste	Required	< Primary data provided in terms of number of bin bags per waste stream	
	Business travel	Required	< Secondary data provided which displays distance travelled for business travel	Aim to collect primary data in terms of litres of fuel used
	Hotel stays	Recommended	< Not applicable	N/A
	Staff commuting	Recommended	< Not applicable	N/A
	Outbound courier deliveries of packages	Recommended	< Not applicable	N/A
	Third party distribution and storage of inbound	Recommended	< Not applicable	N/A

[2] Transmission and Distribution (T&D) losses refer to the scope 3 emissions associated with grid losses (the energy loss that occurs in getting the electricity from the power plant to the organisations that purchase it).

[3] Well-to-Tank (WTT) emissions refer to the impact of the extraction, refining and transportation of primary fuels before their use in the generation of electricity.

	production-related goods			
	Third party transportation of outbound final products	Required	< Included within scope 1 emissions	N/A
	Homeworking	Required	< No data available	N/A
Assessment emissions based on primary data			**99.4%**	

3.4 Key assumptions

Upon completion of the quality assurance phase, the following assumptions were agreed with the client:

- Due to a lack of detailed information, all car journeys have been assumed as 'average' car size, and business travel in cars has been split 50/50 between fuel types diesel and petrol.
- Where waste has been provided in litres, it has been assumed that the office bins weighed 70kg/m^3 and compost waste was 6kg per 20 litre bucket.
- Both incinerated and recycled waste streams are assumed to compromise 'average commercial waste'.

4 RESULTS

4.1 GHG emissions summary

Table 5 shows total GHG emissions estimated during the reporting year, together with emissions displayed using metrics related to company activities. Absolute GHG emissions can vary over time and often correspond to the expansion or contraction of an organisation. It is therefore useful to use reporting metrics that take these effects into account to establish emissions intensity. Common emissions intensity metrics include tCO_2e per £m turnover, per FTE staff, or per square metre floor area (m^2).

Table 5: 2020 GHG emissions summary

Metric	GHG emissions
Total GHG emissions (market)	1,799.7
Total GHG emissions (location)	*1,724.4*
GHG emissions per FTE (114) (market)	15.8
GHG emissions per sqm floor area (11,460m^2) (market)	0.2

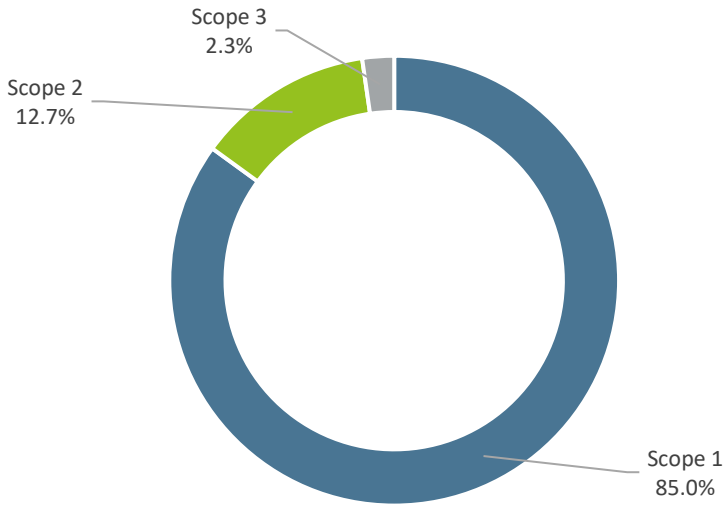
4.2 GHG emissions by scope

Table 6 and Figure 1 present GHG emissions by scope estimated for company activities.

Table 6: 2020 GHG market emissions by scope

Emissions scope	GHG emissions (tCO_2e)
Scope 1 – Direct emissions	1,529.8
Scope 2 – Indirect electricity emissions	228.8
Scope 3 – Other indirect emissions	41.1
Total	**1,799.7**

Figure 1. GHG emissions by scope (tCO2e)

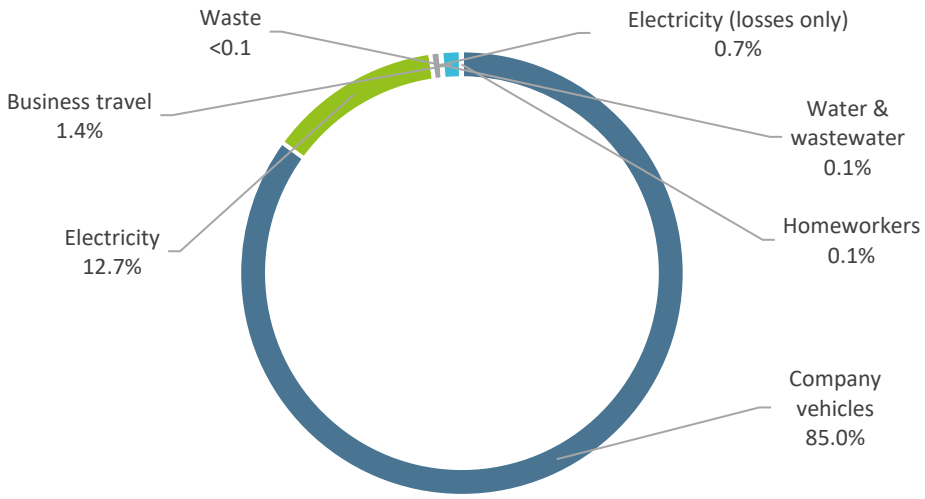


Scope 1 (direct) emissions from company owned vehicles represent the largest emissions scope (approximately 85%), predominantly from fleet vehicles, followed by scope 2 emissions (12.7%) from mains electricity consumption. Scope 3 (other indirect emissions) account for the remaining 2.3% of the carbon footprint.

4.3 GHG emissions by source category

Table 7 and Figure 2 present GHG emissions by source relating to company activities.

Figure 2. CarbonNeutral® Company GHG emissions by source (tCO2e)



Regarding emissions sources, company vehicles is Shred Station's largest source (approximately 85%), followed by electricity consumption (~13%) and business travel (~1%). Emissions from waste, water supply and treatment of wastewater and electricity T&D losses account for less than 1% each of the overall footprint.

Table 7: 2020 GHG market emissions by source category

Activity	GHG emissions (tCO_2e)	Sub-total (tCO_2e)
Premises		
Refrigerant gas losses	0.0	**243.1**
Electricity, including T&D	242.0	
Water and wastewater	1.1	
Waste	0.1	
Business travel		
Taxi	0.4	**25.3**
Car	24.9	
Company Vehicles		
Car	9.8	**1,529.9**
Lorry	1,520.1	
Homeworkers		
Homeworkers	1.4	**1.4**
Total		**1,799.7**

4.4 Comparison of 2018 & 2019 GHG emissions

A comparison of GHG emissions from their current (2020) and previous (2019) GHG assessments is provided in Table 8.

Table 8: Comparison of 2019 & 2020 GHG emissions

Emissions source category	GHG emissions (tCO_2e)		
	2019	2020	Change
Refrigerant gases	0.0	0.0	**0.0**
Electricity including	119.8	242.0	**+ 122.2**
Water and wastewater	0.9	1.1	**+ 0.2**
Waste	<0.1	0.1	**- <0.1**
Business travel	20.5	25.3	**+ 4.8**
Company Owned Vehicles	1,572.0	1,529.8	**- 42.2**
Homeworkers	--	1.4	**+ 1.4**

Emissions source category	GHG emissions (tCO_2e)		
	2019	2020	Change
Total	**1,713.3**	**1,799.7**	**+86.4**
Emissions per FTE staff	14.9	15.8	**+ 0.9**
Emissions per sqm floor area	0.1	0.2	**+ 0.1**

Overall, there has been an increase in total emissions between 2019 and 2020, predominantly due to an increase in electricity consumption.

4.5 Impact of COVID-19

Shred Station experienced little change as a result of the COVID-19 pandemic. This was because Shred Station are classified as a key workers group, so large aspects of the business were unaffected. It is uncertain if there were any substantial affects associated with the pandemic with regards to emissions, but it should be noted that 2020 and 2021 may represent an anomaly from the baseline assessment. An opportunity has arisen from the Pandemic in the way businesses can communicate remotely, and measures could be taken to prevent / reduce emissions.

BIBLIOGRAPHY

AIB (2019), Association of Issuing Bodies

BSRIA (2011), Rules of Thumb 5th Edition, Energy Benchmarks.

CIBSE (2012) Guide F – Energy Efficiency in Buildings.

Cundall (2013) CO_2e Emissions Due to Office Waste, Information Paper – 6.

Cundall (2013), Comparison of Building Energy Benchmark to Total energy.

Defra (2020), Environmental Reporting Guidelines, including streamlined energy and carbon reporting guidance.

Defra and BEIS (2020) UK Government GHG Conversion Factors for Company Reporting.

International Organization for Standardization (2018), ISO 14064:18, Greenhouse gases — Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals.

Carbon Lighthouse (2020) https://www.carbonlighthouse.com/covid-building-occupancy-energy-use/ [Accessed 5.1.21]

Natural Capital Partners (2021), The CarbonNeutral® Protocol.

World Business Council for Sustainable Development & World Resource Institute (2004) The Greenhouse Gas Protocol – Corporate Accounting and Reporting Standard.

World Resource Council for Sustainable Development & World Resource Institute (2011), The Greenhouse Gas Protocol – Corporate Value Chain (Scope 3) Accounting and Reporting Standard.

World Business Council for Sustainable Development & World Resource Institute (2015), The Greenhouse Gas Protocol – Scope 2 guidance, An amendment to the GHG Protocol Corporate Standard.

APPENDIX A: APPLIED EMISSION FACTORS

Table 9: Applied emission factors

Emissions source	Notes	Factor	Unit	Reference
Electricity	UK, consumed (location)	0.23314	$kgCO_2e/kWh$	Defra 2020
	UK, consumed (market)	0.3475	$kgCO_2e/kWh$	Defra 2020
	UK T&D losses	0.02005	$kgCO_2e/kWh$	Defra 2020
Diesel	Average biofuel blend	2.54603	$kgCO_2e/l$	Defra 2020
Petrol	Average biofuel blend	2.16802	$kgCO_2e/l$	Defra 2020
Water consumption	Water supply	0.344	$kgCO_2e/m^3$	Defra 2020
Wastewater	Water treatment	0.708	$kgCO_2e/m^3$	Defra 2020
Waste incinerated	Average commercial and industrial	21.3167	$kgCO_2e/t$	Defra 2020
Waste recycled		21.3167	$kgCO_2e/t$	Defra 2020
Waste composted	Food waste	10.2039	$kgCO_2e/t$	Defra 2020
Car	Average car, diesel	0.16844	$kgCO_2e/km$	Defra 2020
Car	Average car, petrol	0.28052	$kgCO_2e/km$	Defra 2020
Taxi	Regular taxi	0.20369	$kgCO_2e/pkm$	Defra 2020

Notes
Defra 2020 = *UK Government GHG Conversion Factors for Company Reporting,* Defra/BEIS, 2020
pkm = passenger kilometre
RF = radiative forcing