



Carbon Footprint Report: 2021 – 2022

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Atwell International Ltd – Carbon Footprint Report: 2021 – 2022

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Atwell International Ltd – Carbon Footprint Report: 2021 – 2022

Introduction

Atwell International have taken a detailed look at their business practices, utility consumption, waste production and more to calculate their CO2 emissions and carbon footprint for the 2021 – 2022 financial year.

Every effort has been made to provide a thorough report using data compiled from utility bills, meter readings and supplier invoices. Emission factors have been obtained from the [UK government's 'Conversion factors 2022' spreadsheet](#) available from the government website.

The decision to use this document was primarily to use a singular source of the latest data due to variations, discrepancies, and potentially outdated information available on the internet.

About Atwell International Ltd

Incorporated in March 1996, Atwell International import and supply elevator components to the UK lift industry, as well as exporting to Europe, Asia and the rest of the world. Atwell International specialise in VG Safety Products™ - emergency braking systems used to prevent elevators moving from unintended movement, overspeed or due to critical component failure.

Atwell International took on a new direction in 2010 when Russell Walker, Managing Director, steered the company toward becoming the preferred supplier for unintended movement protection solutions in line with European Standards.

Atwell International is a small company which currently employs 9 members of staff and is based in rural Worcestershire.

About the Author

The data analysis and reporting has been compiled and written by Mike Lewis, Operations Manager at Atwell International. Mike has worked for Atwell International since 2006 and has a thorough understanding of the business, its products as well as its aims and practices.

Mike would like to thank his colleagues at Atwell International for their support with this project.

Base Year

This is the first reporting that Atwell International have undertaken regarding their carbon footprint. As such the period 1st March 2021 to 28th February 2022 is to be considered their **base year** for reporting. All future reporting on emissions will refer to this document for comparison purposes and to monitor for changes in performance.

Due to this, the reporting will be considered as detailing **gross** emissions for the company. This report will help to establish their impact and to offer suggestions and recommendations on how to offset those emissions.

This period was chosen as the base year due to the time of the report being compiled. The financial year end reporting had just been completed and it seemed to be a natural point to begin the process of voluntarily reporting our emissions and environmental impact.

The evidence and effects of climate change is clear to see with record temperatures, wildfires, drought and flash flooding in the UK, Europe and globally increasing in recent months. Monitoring, reporting, and improving of emissions seems to be more critical than ever.

Business produces a significant proportion of the UK's greenhouse gas emissions and Atwell International are committed to reducing their global greenhouse gas emissions by halve before 2030 and to track our performance against targets.

Paris Agreement

The Paris Agreement is a legally binding international treaty on climate change. Its goal is to limit global warming to below 2, preferably 1.5 degrees Celsius, when compared to pre-industrial levels. The long-term goal is to achieve a climate neutral world by 2050.

The UK government has targeted cutting emissions by 78% by 2035 compared to 1990 levels. This would bring the UK more than three-quarters of the way to net zero by 2050.

Atwell International aim to set a science-based target for its reduction of emissions in-line with the Paris Agreement.

COVID-19 Impact

The COVID-19 pandemic illustrated that business models and behaviour can be changed with the introduction of working from home and many office buildings remaining empty during lockdown.

Due to the nature of the business, Atwell International remained operational throughout the pandemic as it indirectly supplies equipment to the NHS. Several members of staff worked from home while in-office staffing was kept to a minimum during the peak of the pandemic.

Reporting on Emissions

The most widely accepted approach for reporting emissions is to identify and categorise emission related activities into three groups, known as scopes. The scopes are:

Scope 1 (Direct emissions): Activities owned or controlled by an organisation that release emissions directly into the atmosphere. Examples of scope 1 emissions include emissions from combustion in owned or controlled vehicles, boilers or furnaces.

Scope 2 (Energy indirect): Emissions that are released into the atmosphere associated with consumption of purchased electricity, heat, steam and cooling. These emissions are an indirect consequence of an organisation's activities which occur at sources that are not owned or controlled by that organisation.

Scope 3 (Other indirect): Emissions that are a consequence of an organisation's actions, which occur at sources that are not owned or controlled by that organisation which are not classed as Scope 2 emissions. Examples of scope 3 emissions include business travel (by means not owned or controlled by the organisation), waste disposal, working from home and importing, exporting and distributing goods.

Scope 1 (Direct Emissions)

Mobile Consumption

Atwell International leases a Ford Connect van that is used for visits to suppliers or for site visits. The mileage has been calculated from the odometer readings at the start and end of the base year. The start mileage was deducted from the end mileage to determine the distance covered.

The author acknowledges that there are more accurate ways to record this data, however the importance of this data was not realised during the base year and was not accurately recorded.

The distance covered has been converted from miles to kilometres, before being multiplied by the emission factor for that specific vehicle. The individual vehicle emissions factor has been obtained from the [UK government's vehicle enquiry service](#).

The formula used for calculating the emissions is:

$$\text{Vehicle Emissions (g / km) x Distance Travelled (km) / 1,000,000 = Tonnes of CO2 equivalent (tCO2e)}$$

Distance Travelled (km)	Emission Factor (g / km)	Total Emissions (g / km)	Total Emissions (tCO2e)
3,384.44	130	439,977.46	0.4400

Stationary Consumption

Atwell International's warehouse, production areas and office spaces are heated by an oil-fired boiler, which is approximately 30 years old. Due to the age of the unit, it has been estimated by an external company that the efficiency rating has fallen to around 70%.

While the office space is well insulated, it has been highlighted that heat escapes through gaps in the window frames due to the age of the building. The warehouse also loses heat due to the roller shutter door being left open due to constant forklift traffic.

Typically, up to two thirds of the heat generated in a building is lost through the building fabric. The remaining third is lost through ventilation and through additional gaps in the fabric.

The author acknowledges that significant improvements can be made in this area.

Consumption data for quantities of oil used within the base year has been taken directly from supplier invoices. The emission factor for heating oil has been obtained from the [UK government's 'Conversion factors 2022' spreadsheet](#).

The formula used for calculating the emissions is:

$$\text{Quantity of oil (l)} \times \text{Emission factor (kg CO}_2\text{e / l)} / 1,000 = \text{Tonnes of CO}_2\text{ equivalent (tCO}_2\text{e)}$$

Quantity of Oil (l)	Emission Factor (kg CO ₂ e / l)	Total Emissions (kg CO ₂ e / l)	Total Emissions (tCO ₂ e)
2,750	2.540	6,985	6.9850

Process Emissions

It has been determined that the process emissions for Atwell International would be minimal, as the primary operations are assembly of components to produce the final products. Any emissions generated in the manufacture of the components should be reported within the supplying company's scope 1 emissions calculations.

Atwell International very occasionally has requirements for in-house welding. This has been estimated to be a maximum of 1 hour per month, which would equate to **less than 0.014%** of the total emissions for the base year.

The author acknowledges that there can be improvements in the recording and monitoring of time spent welding.

Fugitive Emissions

Fugitive emissions are defined as leaks and other irregular releases of gases or vapours from pressurized containers.

Atwell International are not aware of any leaks or releases of gases from their heating oil tank, which would be the only potential source of emissions.

Summary of Scope 1 Emissions

Mobile Consumption

Distance Travelled (km)	Emission Factor (g / km)	Total Emissions (g / km)	Total Emissions (tCO2e)
3,384.44	130	439,977.46	0.4400

Stationary Consumption

Quantity of Oil (l)	Emission Factor (kg CO2e / l)	Total Emissions (kg CO2e / l)	Total Emissions (tCO2e)
2,750	2.540	6,985	6.9850

Process Emissions

None declared.

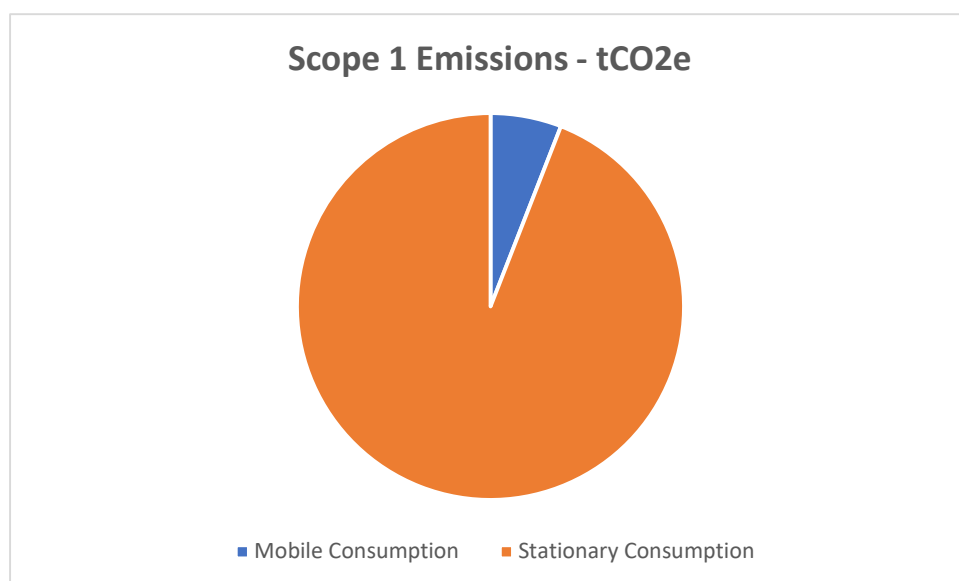
Fugitive Emissions

None declared.

Total Scope 1 Emissions

Atwell International produced **7.42 tonnes of CO2e** in their Scope 1 emissions between 1st March 2021 and 28th February 2022, primarily due to emissions from the use of their oil-fired boiler heating the building.

Of the 7.42 tonnes produced, Mobile Emissions accounted for 5.93% while Stationary Emissions made up the remaining 94.14%.



Scope 2 (Energy indirect)

Electricity Consumption

Atwell International's electricity is supplied by EDF Energy, and all consumption data has been obtained from statements from EDF. The emission factor has been obtained from the [UK government's 'Conversion factors 2022' spreadsheet](#).

The formula used for calculating the emissions is:

$$\text{Consumption (kWh)} \times \text{Emission factor (g CO}_2\text{e / kWh)} / 1,000,000 = \text{Tonnes of CO}_2\text{ equivalent (tCO}_2\text{e)}$$

Consumption (kWh)	Emission Factor (g CO ₂ e / kWh)	Total Emissions (g CO ₂ e / kWh)	Total Emissions (tCO ₂ e)
21,842.57	193.38	4,223,916.19	4.2239

Purchased Steam

Atwell International does not have any cause to use purchased steam, so there will be no emissions as a result.

Cold Supply

Atwell International does have access to an air conditioning unit within their factory, although it is not in use. There will be no emissions from this activity.

Summary of Scope 2 Emissions

Electricity Consumption

Consumption (kWh)	Emission Factor (g CO2e / kWh)	Total Emissions (g CO2e / kWh)	Total Emissions (tCO2e)
21,842.57	193.38	4,223,916.19	4.2239

Purchased Steam

None declared.

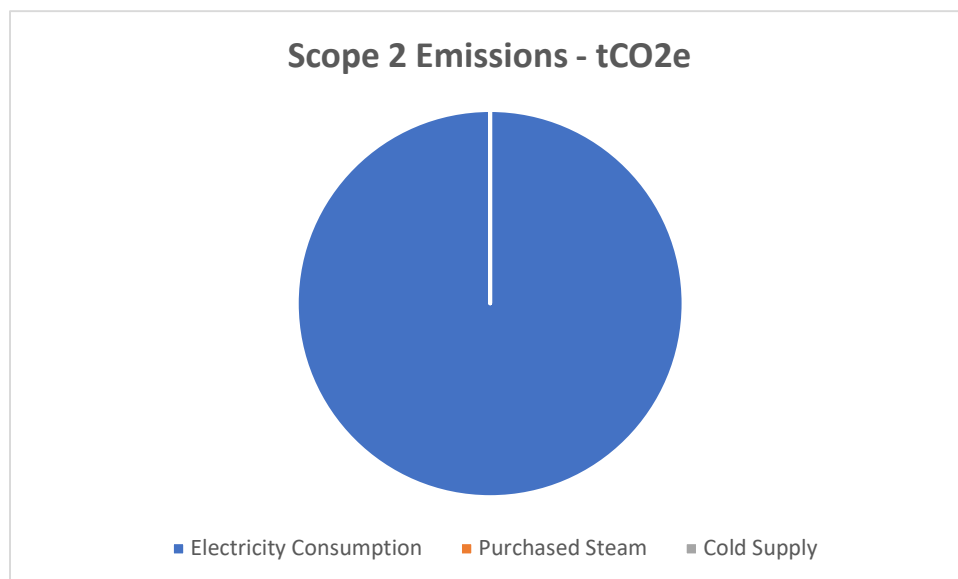
Cold Supply

None declared.

Total Scope 2 Emissions

Atwell International were responsible for the generation of approximately **4.22 tonnes of CO2e** through their use of electricity between 1st March 2021 and 28th February 2022.

As there are no emissions from Purchased Steam or Cold Supply, 100% of Atwell's Scope 2 emissions were produced via their use of electricity.



Scope 3 (Other Indirect)

Employee Commuting

Atwell International employed 10 members of staff during the reporting period, all of whom use cars for commuting. Their office and warehouse facility are located approximately 4.5 miles from Worcester city centre. Public transport is infrequent, and the road has a regular movement of fast paced traffic making cycling a potentially dangerous prospect.

There are several elements used to generate the data for this reporting. The distance from the employee's home to Atwell International has been obtained using the most direct route on Google maps. This distance has been doubled to reflect the return journey.

An estimate has been calculated for the number of days travelling to work using the following formula:

$$\text{Work days} - \text{Holiday allocation} - \text{Working from home} - \text{Sickness} = \text{Total Days}$$

- Work days have been calculated for the reporting period by using the [Count Days](https://www.timeanddate.com) feature on <https://www.timeanddate.com>, excluding weekends and public holidays.
 - Work days has been additionally adjusted for employment start and finish dates where applicable.
- Holiday allocation has been taken from Atwell International's Microsoft Exchange calendar.
 - Any mid-week birthdays have also been taken into consideration as time off is given as a perk.
- Sickness days and time working from home has been totalled based on calendar entries from Atwell International's Microsoft Exchange calendar.

Any time off for sickness or time working from home that has not been included in the calendar is considered as unknown and is not included in this report. The author acknowledges that vast improvements can be made to the recording of this information.

The distance travelled has been converted from miles to kilometres, before being multiplied by the emission factor for the employee's specific vehicle, which has been obtained from the [UK government's vehicle enquiry service](#).

An estimate of the total daily emissions has been calculated by using the formula:

$$\text{Vehicle Emissions (g / km)} \times \text{Distance Travelled (km)} / 1,000 = \text{Total Daily Emissions (CO2 / kg)}$$

Finally, the formula used for calculating the emissions of each employee's commute is:

$$\text{Total Days} \times \text{Total Daily Emissions (CO2 / kg)} / 1,000 = \text{Tonnes of CO2 equivalent (tCO2e)}$$

A summary of the total distance travelled, and the emissions generated for all employee commuting is as follows:

Distance Travelled (km)	Total Emissions (tCO2e)
128,624	18.0001

Employees Working from Home

Several members of staff have worked from home during the 2021 – 2022 financial year, although not for prolonged periods of time.

Any time spent working from home has been totalled using calendar entries from Atwell International’s Microsoft Exchange calendar. Unfortunately, time working from home that has not been detailed on the calendar is considered unknown and is not included in this report.

The emission factor has been obtained from the [UK government’s ‘Conversion factors 2022’ spreadsheet](#).

The formulas used for calculating the emissions is:

$$\text{Full-time Equivalent Working Hours} \times \text{Days Working From Home} = \text{FTE Working Hours}$$

$$\text{FTE Working Hours} \times \text{Emission Factor (kg CO}_2\text{e / FTE Working Hours)} / 1,000$$

$$= \text{Tonnes of CO}_2\text{ equivalent (tCO}_2\text{e)}$$

FTE Working Hours	Emission Factor (kg CO ₂ e / FTE Working Hours)	Total Emissions (kg CO ₂ e)	Total Emissions (tCO ₂ e)
376	0.34075	128.12	0.1281

Business Travel

Atwell International occasionally have a requirement to visit customer’s premises or to attend their customer’s site to complete a survey of equipment needed. This travel has been in employee’s own vehicles so has not been included in Scope 1.

Details of survey dates has been obtained from calendar entries from Atwell International’s Microsoft Exchange calendar.

The distance travelled from Atwell International, or in some cases the employee’s home, to site or customer premises has been obtained using the most direct route on Google maps. This distance has been doubled to reflect the return journey before being converted to kilometres.

The vehicle emissions have been used from the information gathered while reporting on Employee Commuting.

The total emissions have been calculated by using the formula:

$$\text{Vehicle Emissions (g / km)} \times \text{Distance Travelled (km)} / 1,000,000$$

$$= \text{Total Emissions (tCO}_2\text{e)}$$

There have been no other methods of business travel for the reporting period. A summary of the total distance travelled, and the emissions generated for all business travel is as follows:

Distance Travelled (km)	Total Emissions (tCO ₂ e)
4,425	0.7125

Hotel Stays

While there were visits to customers, sites and suppliers in the 2021 – 2022 financial year, none of those visits required hotel stays.

The author noted that there was no current methodology for recording hotel stays though and has highlighted this as an area for improvement.

Water Supply

Atwell International's water is supplied by Water Plus, and all consumption data has been obtained from their statements. The emission factor has been obtained from the [UK government's 'Conversion factors 2022' spreadsheet](#).

The formula used for calculating the emissions is:

$$\text{Consumption (m}^3\text{) x Emission Factor (kg CO}_2\text{e / m}^3\text{) / 1,000,000} \\ = \text{Total Emissions (tCO}_2\text{e)}$$

Consumption (m ³)	Emission Factor (kg CO ₂ e / m ³)	Total Emissions (kg CO ₂ e / m ³)	Total Emissions (tCO ₂ e)
42.90	0.149	6.392	0.0064

The author noted that there was no mention or evidence of water used in treatment, so this has not been declared.

Waste Disposal and Recycling

The general waste generated by Atwell International is considered as 'Household residual waste' but could include 'Organic: food and drink waste', 'Metal: aluminium cans and foil' and 'Plastics: average plastics'. There is no current record for each element, although the emission factor for those four categories is the same.

There are three elements to Atwell International's waste disposal and recycling: general waste, cardboard and paper. Packing material and pallets are reused where possible

General waste

Atwell International have a 1,100-litre capacity bin for general waste that is emptied on average twice a month. Statements provided by Clearaway do not detail the weight of waste collected, so this has been estimated.

The formula for this calculation is as follows:

$$\text{Assumed Density Factor x Compaction Factor x Number of Containers x Volume of a Container x} \\ \text{Proportion of Total Waste} = \text{Estimated Weight (kg).}$$

This formula, factors and instructions for use were taken from a [Scottish Environment Protection Agency spreadsheet](#).

Once the estimated weight has been established, the emissions can be calculated using the [UK government's 'Conversion factors 2022' spreadsheet](#).

The formula used for calculating the emissions is:

$$\text{Estimated Weight (t)} \times \text{Emission Factor (kg CO}_2\text{e / t)} / 1,000$$

$$= \text{Total Emissions (tCO}_2\text{e)}$$

Estimated Weight (t)	Emission Factor (kg CO ₂ e / t)	Total Emissions (kg CO ₂ e)	Total Emissions (tCO ₂ e)
7.13	21.28	151.68	0.1517

This waste was disposed of by combustion at an Energy from Waste facility.

Cardboard

Atwell International have a 1,100-litre capacity bin for cardboard that is emptied on average twice a month. Statements provided by Clearaway do not detail the weight of waste collected, so this has been estimated using the methods detailed above.

Estimated Weight (t)	Emission Factor (kg CO ₂ e / t)	Total Emissions (kg CO ₂ e)	Total Emissions (tCO ₂ e)
5.56	21.28	118.26	0.1183

This waste was sent for closed-loop recycling, meaning that it has been recycled to produce more cardboard.

Paper

Atwell International have two paper recycling stations that are emptied once a month. Statements are provided by ShredPro where they provide detail of the weight of paper collected.

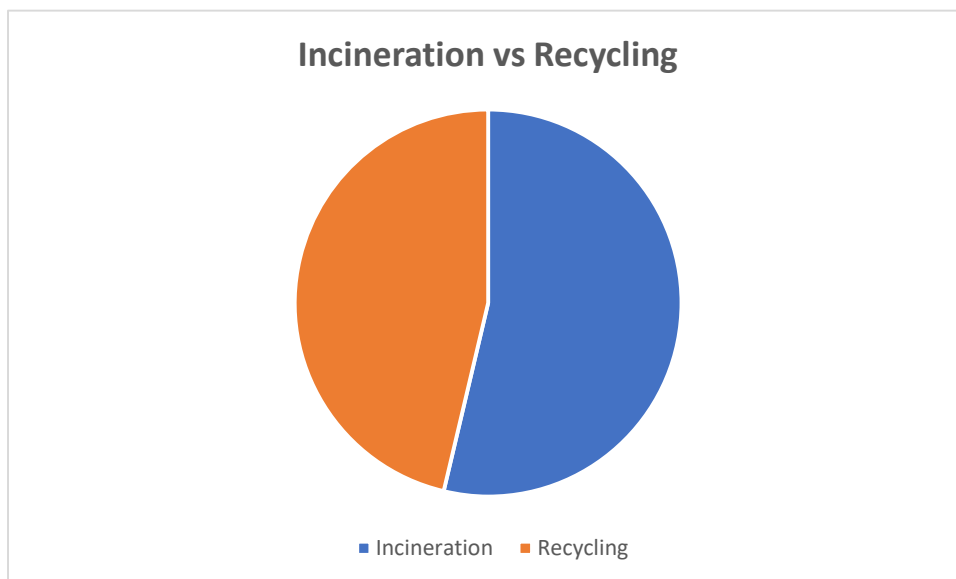
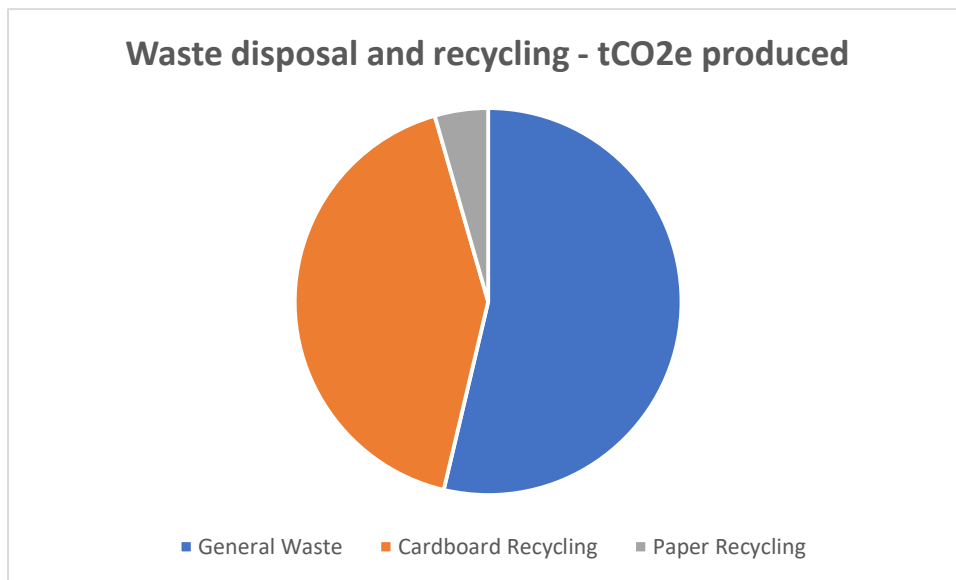
Weight (t)	Emission Factor (kg CO ₂ e / t)	Total Emissions (kg CO ₂ e)	Total Emissions (tCO ₂ e)
0.59	21.28	12.56	0.0126

This waste was sent for closed-loop recycling, meaning that it has been recycled to produce more paper.

Summary

Atwell International generated the following waste during the 2021 – 2022 financial year.

General Waste Emissions (tCO2e)	Cardboard Recycling Emissions (tCO2e)	Paper Recycling Emissions (tCO2e)	Total Emissions (tCO2e)
0.1517	0.1183	0.0126	0.2826



Incoming Goods and Imports

As Atwell International import goods from all over the world, the emissions from freight movement were anticipated to be the largest generator of CO2 equivalent gases for their business.

Data has been collated from freight invoices provided by hauliers, including weight of shipment, the exporter and the destination. This information has been inputted to Google maps to determine the most direct route from exporter to destination. This methodology does not account for any deviations from that route into a hub, for example.

However, routes have been split between journeys where applicable, i.e., Italy to Calais, France by road / Port of Calais, France to Port of Dover, UK / Port of Dover, UK to destination. Any routes that required additional transportation have had the journey legs calculated before adding the elements together to generate a complete overview for that shipment.

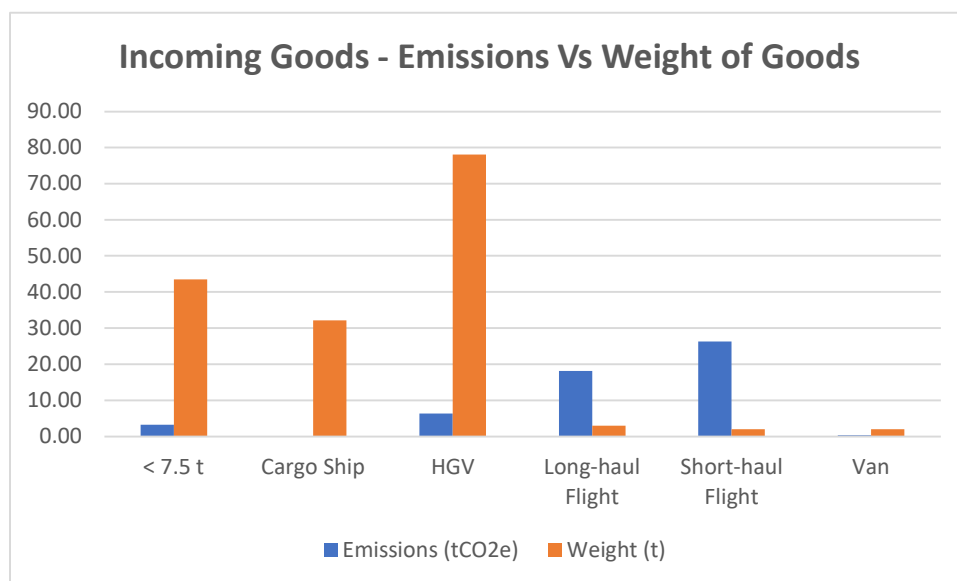
The emission factors for HGVs, vans, cargo ships, short and long-haul flights have been obtained from the [UK government's 'Conversion factors 2022' spreadsheet](#).

The formula used for calculating the emissions is:

$$\text{Weight (t)} \times \text{Vehicle Emissions (kg CO}_2\text{ / t / km)} \times \text{Estimated Kilometres / 1,000} \\ = \text{Estimated Emissions (tCO}_2\text{e)}$$

Weight of Imports (t)	Distance Travelled (km)	Total Emissions (tCO ₂ e)
86.35	194,742	54.2667

The author has noted that Atwell International now has a complete in-depth spreadsheet of freight movements for the reporting period, which will allow for a detailed analysis of imported goods. This will provide insights into potential financial and environmental savings and benefits.



Distribution of Goods

Atwell International primarily ship goods within the United Kingdom, although occasionally export to Europe and the rest of the world. The shipping of goods is normally arranged by customers when they are based outside of the UK, so those emissions should be included in their Scope 3 calculations.

Data has been collected from freight invoices provided by our hauliers, including weight of shipment and the destination postcode. This information has been inputted to Google maps to determine the most direct route from Atwell International to the destination. This methodology does not account for any deviations from that route into a hub, for example.

However, routes have been split between journeys where applicable, i.e., Atwell International to Port of Hollyhead, Wales by road / Port of Hollyhead, Wales to Port of Dublin, Ireland / Port of Dublin, Ireland to destination. Any routes that required additional transportation have had the journey legs calculated before adding the elements together to generate a complete overview for that shipment.

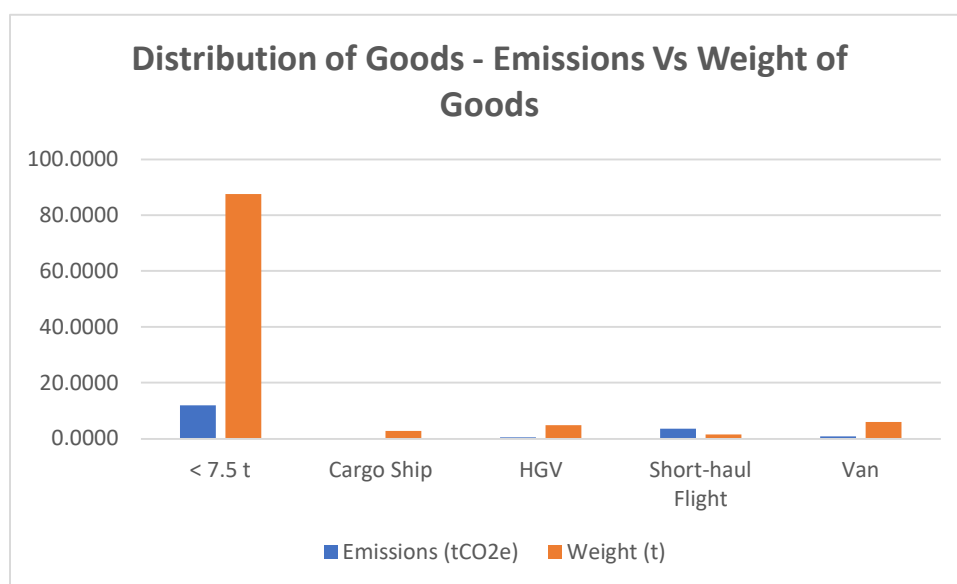
The emission factors for HGVs, vans, cargo ships and short-haul freight flights have been obtained from the [UK government's 'Conversion factors 2022' spreadsheet](#).

The formula used for calculating the emissions is:

$$\text{Weight (t)} \times \text{Vehicle Emissions (kg CO}_2\text{ / t / km)} \times \text{Estimated Kilometres / 1,000} \\ = \text{Total Emissions (tCO}_2\text{e)}$$

Weight of Distributed Goods (t)	Distance Travelled (km)	Total Emissions (tCO ₂ e)
93.76	284,317	16.5724

The author has noted that Atwell International now has a complete in-depth spreadsheet of freight movements for the reporting period, which will allow for a detailed analysis of shipped goods. This will provide further insights into potential financial and environmental savings and benefits.



Summary of Scope 3 Emissions

Employee Commuting

Distance Travelled (km)	Total Emissions (tCO2e)
128,624	18.0001

Employees Working from Home

FTE Working Hours	Emission Factor (kg CO2e / FTE Working Hours)	Total Emissions (kg CO2e)	Total Emissions (tCO2e)
376	0.34075	128.12	0.1281

Business Travel

Distance Travelled (km)	Total Emissions (tCO2e)
4,425	0.7125

Hotel Stays

None declared.

Water Supply

Consumption (m ³)	Emission Factor (kg CO2e / m ³)	Total Emissions (kg CO2e / m ³)	Total Emissions (tCO2e)
42.90	0.149	6.392	0.0064

Waste Disposal and Recycling

General Waste Emissions (tCO2e)	Cardboard Recycling Emissions (tCO2e)	Paper Recycling Emissions (tCO2e)	Total Emissions (tCO2e)
0.1517	0.1183	0.0126	0.2826

Incoming Goods and Imports

Weight of Imports (t)	Distance Travelled (km)	Total Emissions (tCO2e)
86.35	194,742	54.2667

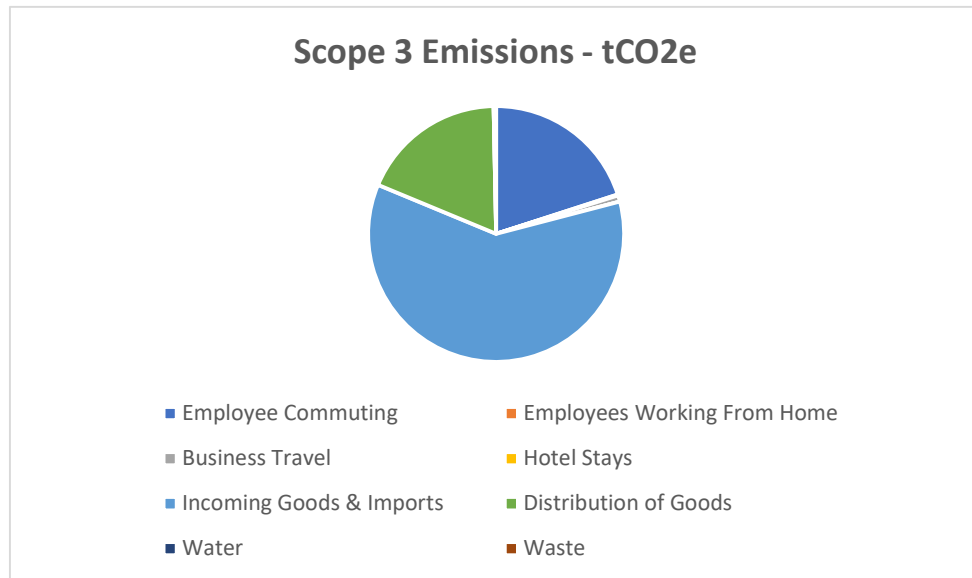
Distribution of Goods

Weight of Distributed Goods (t)	Distance Travelled (km)	Total Emissions (tCO2e)
93.76	284,317	16.5724

Total Scope 3 Emissions

As Scope 3 has the broadest range of reporting elements, it was expected that the emissions generated under this section would be the highest of Atwell International's footprint.

Atwell International produced **89.97 tonnes of CO₂e gases** between 1st March 2021 and 28th February 2022 through their Scope 3 emissions, primarily due to emissions from importing and distributing goods.



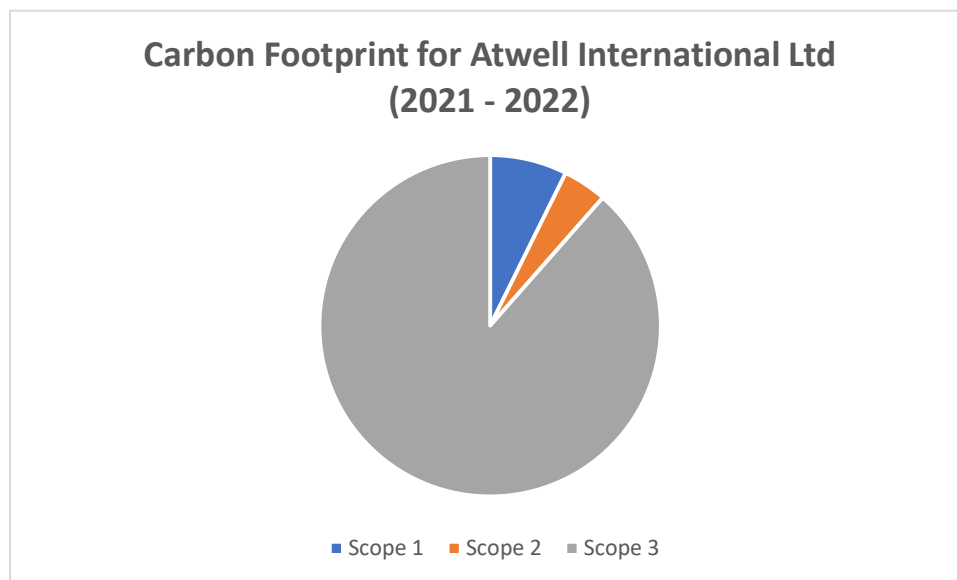
The full breakdown of their Scope 3 emissions is as follows:

- Employee Commuting – 20.01%
- Employees Working from Home – 0.14%
- Business Travel – 0.79%
- Hotel Stays – 0%
- Water Supply – 0.01%
- Waste Disposal and Recycling – 0.31%
- Incoming Goods and Imports – 60.32%
- Distribution of Goods – 18.42%

Carbon Footprint for Atwell International Ltd (2021 – 2022)

Atwell International's total gross emissions for the 2021 – 2022 financial year are as follows:

Scope 1 (tCO2e)	Scope 2 (tCO2e)	Scope 3 (tCO2e)	Total Emissions (tCO2e)
7.42	4.22	89.97	101.62



Of the 101.62 tonnes of CO₂ equivalent gases generated by Atwell International's business Scope 1 emissions account for 7.3%, Scope 2 emissions equate to 4.15% and the emissions from Scope 3 make up the final 88.54%.

This reporting period is Atwell International's base year for all future reporting and will be used to monitor the progress, emission reductions and changes to business practices over the next few years.

Intensity Ratios

In addition to calculating the total emissions generated as a result of their business activities, these results can be broken down further to establish intensity ratios. This enables Atwell International to provide a measurable statistic that can be compared against businesses from other sectors and for future reporting.

The formula for calculating intensity ratios is as follows:

$$\text{Emissions (tCO}_2\text{e)} / \text{Metric} = \text{Intensity Ratio}$$

- tCO₂e (101.62) / tonne of goods shipped (93.76) = 1.08 intensity ratio
- tCO₂e (101.62) / employee (10) = 10.16 intensity ratio
- tCO₂e (101.62) / revenue (£2.06m) = 49.33 intensity ratio

Observations

While compiling data and writing this report, the author has noted numerous improvements that can be made across the whole of Atwell International's business to improve environmental reporting, reporting in general, reduce emissions across each scope and to reduce expenditure.

Scope 1

Mobile Consumption – Insufficient and incomplete reporting of vehicle movements when attending sites or for customer / supplier visits.

Stationary Consumption – The invoices for the supply of heating oil detail the amount of oil replenished, so there are no improvements to be made for the recording of data.

Process Emissions – Insufficient reporting of time spent welding.

Fugitive Emissions – Insufficient monitoring.

Scope 2

Electricity Consumption – Monthly consumption data is often split between invoices, resulting in delays processing the data.

Purchased Steam – Not applicable.

Cold Supply – Not applicable.

Scope 3

Employee Commuting – Assumptions had to be made due to insufficient monitoring of staff movements.

Employees Working from Home – Insufficient reporting and monitoring of staff attendance, sickness, movements and working from home.

Business Travel – Improvements can be made to record details of visits to customers and suppliers.

Hotel Stays – Insufficient reporting of hotel stays.

Water Consumption – The invoices for the supply of water detail the consumption, so there are no improvements to be made for the recording of data.

Waste Disposal and Recycling – There is no option for recycling of plastics or food waste.

Incoming Goods and Imports – There is an over-reliance on importing goods by short and long-haul freight flights.

Distribution of Goods – Some sales orders have multiple deliveries to customers.

General Observations

There seems to have been a shift within the lift industry since the COVID-19 pandemic where the detailed planning of jobs has been replaced by an urgent need for goods. Even when jobs have been quoted months in advance of required start dates, orders are not being sent until the last minute.

While Atwell International have a varied level of stock stored in their warehouse, it is impossible to stock everything. The holding of component stock for VG Safety Products™ has improved, although Atwell International continue to suffer from supplier delays.

The company could benefit from having the ability to calibrate partner equipment, rather than to hold equipment that has been pre-set for a particular requirement that may never be used. This benefit would also reduce the need for goods to be shipped from Europe via short-haul freight flights. Atwell International would then be able to offer improved lead-times to suit the current industry need for next-day delivery of orders.

Recommendations

The observations noted could potentially be improved with the implementation of the following suggestions, although these changes are not exclusive.

Scope 1

Mobile Consumption – Update company procedures so that the named drivers of this vehicle correctly record start and finish mileage for each journey. Alternatively, store and record fuel receipts for more accurate reporting.

Stationary Consumption – Investigate options to improve heating and heat retention, such as replacing the existing boiler, installation of new windows to reduce drafts.

Process Emissions – Update company procedures to monitor time spent welding, the reason for welding and the job that required welding.

Fugitive Emissions – Investigate options for monitoring leaks.

Scope 2

Electricity Consumption – Schedule and record meter readings each month to ensure usage is accurate.

Purchased Steam – Not applicable.

Cold Supply – Not applicable.

Scope 3

Employee Commuting – Investigate potential car sharing opportunities and incentives.

Employees Working from Home – Investigate options for the recording of staff attendance etc.

Business Travel – Update company procedures to accurately record details of business travel.

Hotel Stays – Create a new procedure to detail hotel stays.

Water Consumption – Schedule and record meter readings each month to ensure usage is accurate.

Waste Disposal and Recycling – Introduce recycling bins throughout the building to minimise general waste. Compost bins could also be used for food waste.

Incoming Goods and Imports – Reduce short-haul freight flights where possible. Switch to sea freight via cargo ship in place of long-haul freight flights through improved planning and monitoring of stock.

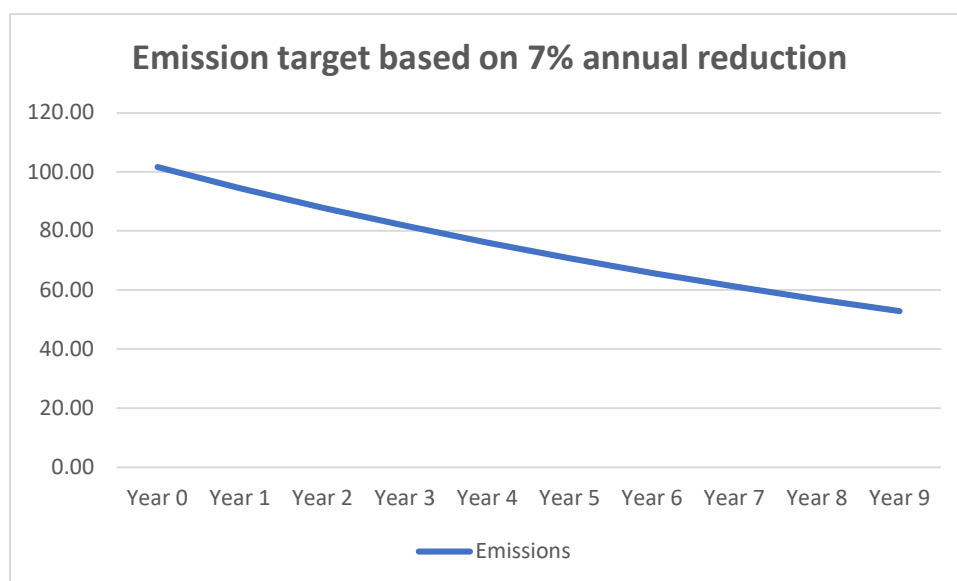
Distribution of Goods – Improve planning and organisation so that all equipment on an order is sent on one shipment.

Emissions Reduction Target

The Paris Agreement aims to halve global greenhouse gas emissions by 2030 and to reach net zero by 2050. In order to achieve this, it is recommended to halve gross emissions every 10 years, but preferably faster.

Halving emissions within 10 years would equate to a 7% year-on-year reduction. Halving in 5 years would be a 13% reduction each year and halving in 3 years would mean a 21% annual emissions reduction.

Atwell International will endeavour to reduce their emissions by 7% per year over a 10-year period. This would result in a target of **49.18 tCO₂e** being generated in the **2030 – 2031** financial year.



Before the 10-year target can be achieved, Atwell International will focus on an initial reduction of **7.11 tCO2e** over the 2022 – 2023 financial year to meet a target of **94.51 tCO2e**.

Year	Emissions (tCO2e)	7% Reduction (tCO2e)	Target (tCO2e)
Year 0 (2021 – 2022)	101.62	7.11	94.51
Year 1 (2022 – 2023)	94.51	6.62	87.89
Year 2 (2023 – 2024)	87.89	6.15	81.74
Year 3 (2024 – 2025)	81.74	5.72	76.02
Year 4 (2025 – 2026)	76.02	5.32	70.70
Year 5 (2026 – 2027)	70.70	4.95	65.75
Year 6 (2027 – 2028)	65.75	4.60	61.14
Year 7 (2028 – 2029)	61.14	4.28	56.86
Year 8 (2029 – 2030)	56.86	3.98	52.88
Year 9 (2030 – 2031)	52.88	3.70	49.18

Reducing Emissions

The analysis of the data gathered for this report has highlighted areas that can be improved upon immediately, such as long-haul freight flights.

This method of importing goods is currently responsible for approximately 17.8% of the total emissions generated from Atwell International’s business (see Appendix V). These goods will still need to be imported to the UK, but preferably via other means.

Long-haul Freight Flight vs General Cargo Ship

A detailed analysis of shipping goods via freight flight vs cargo ship would require more information such as the port of departure and port of arrival. This would also affect the emissions generated from transporting goods to and from ports rather than airports, so would also change the distance travelled and emissions for those journeys.

However, a basic estimate of the potential reduction can be made by changing the emissions factor from that of a long-haul freight flight to that of a general cargo ship.

Using the formula previously used for calculating the emissions of imported goods would change the emissions from 18.09 tCO2e to approximately 0.23 tCO2e and could have potentially reduced those emissions by up to **17.86 tCO2e**.

This change alone could reduce Atwell International’s total emissions to approximately 83.76 tCO2e which would be approaching their Year 2 target.

Offsetting Emissions

Further to the observations and recommendations previously noted, Atwell International have looked at options to determine their preferred methods of offsetting their carbon footprint. The primary methods are likely to be through supporting companies such as [Ecologi](#) and [Big Blue Ocean Cleanup](#).

Ecologi are a UK based company that support a range of carbon reduction projects across the globe. These projects vary from generating solar power energy in Vietnam and Egypt, producing wind powered electricity in South Africa, Honduras and Mexico, protecting and restoring forests in Argentina, Peru and Bolivia, and planting trees in Kenya and Tanzania.

As well as the obvious environmental benefits, the work undertaken by Ecologi also creates jobs for villagers within these countries which leads to the villagers having an economic incentive to ensure the wellbeing of the project.

Big Blue Ocean Cleanup work in over 100 countries each year to clean plastics on land and at sea to protect oceans, provide plastic offsetting, establish marine nature reserves and to protect vulnerable marine animals. To date, they have recovered more than 5 million kilograms of plastic material from our oceans.

Atwell International will also be making enquiries with their suppliers to establish what they are doing to minimize their own carbon impact and to encourage them to monitor their emissions if they are not already doing so. Hopefully, this will lead to a list of environmentally conscious suppliers that Atwell International can work with.

Net Zero

Atwell International hope to achieve net zero emissions through actively pursuing ways and means to reduce their gross emissions, along with offsetting emissions that are beyond their control or influence.

The emissions saved through policy changes will be reflected in the cost of offsetting emissions from other sources falling year on year.

Future Reporting

The author suggests that further changes be made to improve future reporting and recording of data, such as the electronic storage of supplier invoices, scheduled collection of data and processing of information.

Monthly or quarterly reporting would enable adjustments to be made to stay on target. The collection, analysis and reporting of this data annually is a large task, and any alterations to reduce this would be beneficial.

Emissions factors would likely be taken from official UK government documentation to ensure continuity. The emissions data may need to be entered after the consumption data has been processed using the methodology in this report, depending on when the updated UK government documentation becomes available.

Appendix I

Units of Measurement

The following table shows the units of measurement used for emission factors and calculations within this document.

Scope	Emissions source	Unit	Description
1	Mobile consumption	g	Gram
		kg	Kilogram
		km	Kilometre
1	Stationary consumption	l	Litre
2	Electricity consumption	kWh	Kilowatt hour
3	Employee commuting	g	Gram
		kg	Kilogram
		km	Kilometre
3	Employees working from home	FTE	Full Time Equivalent (hours)
		kg	Kilogram
3	Business travel	g	Gram
		kg	Kilogram
		km	Kilometre
3	Water consumption	m ³	Meters cubed
		kg	Kilogram
3	Waste disposal & recycling	kg	Kilogram
		t	Tonne
3	Incoming goods and imports	kg	Kilogram
		t	Tonne
		km	Kilometre
3	Distribution of Goods	kg	Kilogram
		t	Tonne
		km	Kilometre
	General	g CO2e / kWh	Gram of CO2 equivalent gas per kilowatt hour
		kg CO2e / km	Kilogram of CO2 equivalent gas per kilometre
		kg CO2e / t	Kilogram of CO2 equivalent gas per tonne
		kg CO2e / m ³	Kilogram of CO2 equivalent gas per metre cubed
		kg CO2e / t / km	Kilogram of CO2 equivalent gas per tonne per kilometre
		tCO2e	Tonne of CO2 equivalent gas

Appendix II

Emission Factors

The following table shows the emission factors that have been used within Atwell International's calculations for assessing their carbon footprint, and where those figures have been taken from.

Scope	Category	Emissions source	Emission factor	Measurement	Source
1	Mobile consumption	Ford Connect van	130	g / km	UK government vehicle enquiry service
1	Stationary consumption	Heating oil	2.540	kg CO2e / l	UK government 'Conversion factors 2022' spreadsheet
2	Electricity consumption	Electricity	193.38	g CO2e / kWh	UK government 'Conversion factors 2022' spreadsheet
3	Employee commuting	Vehicle 1	139	g / km	UK government vehicle enquiry service
3	Employee commuting	Vehicle 2	164	g / km	UK government vehicle enquiry service
3	Employee commuting	Vehicle 3	137	g / km	UK government vehicle enquiry service
3	Employee commuting	Vehicle 4	154	g / km	UK government vehicle enquiry service
3	Employee commuting	Vehicle 5	138	g / km	UK government vehicle enquiry service
3	Employee commuting	Vehicle 6	115	g / km	UK government vehicle enquiry service
3	Employee commuting	Vehicle 7	113	g / km	UK government vehicle enquiry service
3	Employee commuting	Vehicle 8	116	g / km	UK government vehicle enquiry service
3	Employee commuting	Vehicle 9	118	g / km	UK government vehicle enquiry service
3	Employee commuting	Vehicle 10	108	g / km	UK government vehicle enquiry service
3	Employees working from home	Employees working from home	0.34075	kg CO2e / FTE hours	UK government 'Conversion factors 2022' spreadsheet
3	Business travel	Vehicle 1	139	g / km	UK government vehicle enquiry service
3	Business travel	Vehicle 2	164	g / km	UK government vehicle enquiry service
3	Water supply	Water	0.149	kg CO2e / m ³	UK government 'Conversion factors 2022' spreadsheet
3	Waste disposal & recycling	General waste	21.28	kg CO2e / t	UK government 'Conversion factors 2022' spreadsheet

Scope	Category	Emissions source	Emission factor	Measurement	Source
3	Waste disposal & recycling	Recycled cardboard	21.28	kg CO2e / t	UK government 'Conversion factors 2022' spreadsheet
3	Waste disposal & recycling	Recycled paper	21.28	kg CO2e / t	UK government 'Conversion factors 2022' spreadsheet
3	Incoming goods & imports	< 7.5 t vehicle	0.56214	kg CO2e / t / km	UK government 'Conversion factors 2022' spreadsheet
3	Incoming goods & imports	General Cargo Ship	0.01323	kg CO2e / t / km	UK government 'Conversion factors 2022' spreadsheet
3	Incoming goods & imports	HGV	0.10614	kg CO2e / t / km	UK government 'Conversion factors 2022' spreadsheet
3	Incoming goods & imports	Long-haul Freight Flight	1.0189	kg CO2e / t / km	UK government 'Conversion factors 2022' spreadsheet
3	Incoming goods & imports	Short-haul Freight Flight	2.30229	kg CO2e / t / km	UK government 'Conversion factors 2022' spreadsheet
3	Incoming goods & imports	Van	0.57871	kg CO2e / t / km	UK government 'Conversion factors 2022' spreadsheet
3	Distribution of Goods	< 7.5 t vehicle	0.56214	kg CO2e / t / km	UK government 'Conversion factors 2022' spreadsheet
3	Distribution of Goods	General Cargo Ship	0.01323	kg CO2e / t / km	UK government 'Conversion factors 2022' spreadsheet
3	Distribution of Goods	HGV	0.10614	kg CO2e / t / km	UK government 'Conversion factors 2022' spreadsheet
3	Distribution of Goods	Short-haul Freight Flight	2.30229	kg CO2e / t / km	UK government 'Conversion factors 2022' spreadsheet
3	Distribution of Goods	Van	0.57871	kg CO2e / t / km	UK government 'Conversion factors 2022' spreadsheet

Appendix III

Links

All links mentioned in this document should be accessible by clicking the link to visit the site or document. For clarity, the following links have been referred to within this document.

Description	Link
UK government's vehicle enquiry service	https://vehicleenquiry.service.gov.uk/?_ga=2.142251958.565517030.1660302567-547588584.1655905928
UK government 'Conversion factors 2022' spreadsheet	https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2022
Scottish Environment Protection Agency spreadsheet	https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKewjChZ_G4t_5AhUQSUEAHZgaAN8QFnoECAUQAQ&url=https%3A%2F%2Fwww.sepa.org.uk%2Fmedia%2F163323%2Fuk-conversion-factors-for-waste.xlsx&usg=AOvVaw2nKM5P0eacwJA6VTuudhM9
Time and Date – Count Days	https://www.timeanddate.com/date/duration.html
Ecologi	https://ecologi.com/
Big Blue Ocean Cleanup	https://www.bigblueoceancleanup.org/

Appendix IV

Reference Material

The following PDFs have been referred to for additional assistance in collating information and for the calculations used within this document.

Description	Link	Purpose
The 1.5 °C Business Playbook	https://exponentialroadmap.org/wp-content/uploads/2020/09/1.5C-business-playbook-version-1.1.pdf	General advice
TNT Choosing Guide 2018	https://www.tnt.com/dam/tnt_express_media/tnt-local-pages/en_gb/tnt-int-choosing-guide-2018.pdf	Details of airports used by TNT

Appendix V

Breakdown of Emissions

The following table further details Atwell International's emissions by Scope and percentage of that emission source when compared to the Scope and Atwell International's total emissions.

Scope	Category	Emissions source	tCO2e produced	% of Scope emissions	% of Total emissions
1	Mobile consumption	Ford Connect van	0.44	5.93	0.43
1	Stationary consumption	Heating oil	6.985	94.14	6.87
2	Electricity consumption	Electricity	4.2239	100	4.16
3	Employee commuting	Vehicle 1	1.1675	1.30	1.10
3	Employee commuting	Vehicle 2	7.0337	7.82	6.92
3	Employee commuting	Vehicle 3	1.4882	1.65	1.46
3	Employee commuting	Vehicle 4	0.6699	0.74	0.66
3	Employee commuting	Vehicle 5	3.1034	3.45	3.05
3	Employee commuting	Vehicle 6	0.8693	0.97	0.86
3	Employee commuting	Vehicle 7	0.4085	0.45	0.40
3	Employee commuting	Vehicle 8	1.1096	1.23	1.09
3	Employee commuting	Vehicle 9	1.2068	1.34	1.19
3	Employee commuting	Vehicle 10	0.9432	1.05	0.93
3	Employees working from home	Employees working from home	0.1281	0.14	0.13
3	Business travel	Vehicle 1	0.0738	0.08	0.07
3	Business travel	Vehicle 2	0.6387	0.71	0.63
3	Water supply	Water	0.0064	0.01	0.01
3	Waste disposal & recycling	General waste	0.1517	0.17	0.15
3	Waste disposal & recycling	Recycled cardboard	0.1183	0.13	0.12
3	Waste disposal & recycling	Recycled paper	0.0126	0.01	0.01
3	Incoming goods & imports	< 7.5 t vehicle	3.2	3.56	3.15
3	Incoming goods & imports	General Cargo Ship	0.02	0.02	0.02

Scope	Category	Emissions source	tCO2e produced	% of Scope emissions	% of Total emissions
3	Incoming goods & imports	HGV	6.38	7.09	6.28
3	Incoming goods & imports	Long-haul Freight Flight	18.09	20.11	17.80
3	Incoming goods & imports	Short-haul Freight Flight	26.25	29.18	25.83
3	Incoming goods & imports	Van	0.32	0.36	0.31
3	Distribution of Goods	< 7.5 t vehicle	11.8720	13.21	11.68
3	Distribution of Goods	General Cargo Ship	0.0018	0.002	0.001
3	Distribution of Goods	HGV	0.4214	0.47	0.41
3	Distribution of Goods	Short-haul Freight Flight	3.5106	3.90	3.45
3	Distribution of Goods	Van	0.7665	0.85	0.75

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