PERMANENT WAY INSTITUTION

Organisational Carbon Footprint Report - 2019

Ethical Nation Ltd
Analysis and Report on Organisational Emissions

Contents

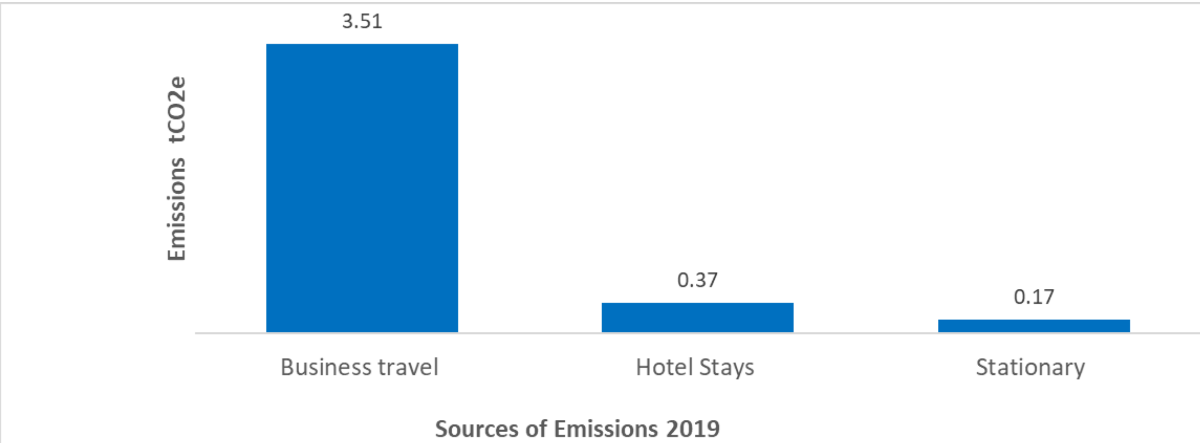
EXECUTIVE SUMMARY

This carbon footprint report comprises of two sections covering the calendar year ending 31st of December 2019.

- **Section 1:**

Section 1 details Permanent Way Institution's organisational carbon footprint following the internationally recognised ISO-14064-1:2006 standard and GHG Protocol. The analysis shows that Permanent Way Institutions' organisational carbon emissions for the period amounted to **4.88 tonnes of CO_2e**. The largest single source of emissions was from Business Travel (72%), illustrated in Figure 1, followed by Hotel Stays (8%) and Stationary (3%). There are no emissions from employee commuting, and emissions from employees working from home are negligible (less than 0.01% of the footprint). This is testament to the Permanent Way Institution's highly carbon efficient business model.

Figure 1: Carbon Emissions (tonnes of CO_2)



In addition to reviewing the absolute footprint, this report also benchmarks emissions "per £ million turnover" and "per full time employee (FTE)" – shown in Table 1. As opposed to absolute metrics, these intensity metrics provide relative tCO2e figures for organisational carbon footprints. This allows for comparison between companies, but also can provide a useful alternative to absolute figures. For example, if a company is growing rapidly the absolute tCO2e figure may increase. However, the intensity metric will be useful in highlighting relative reductions in carbon intensity.

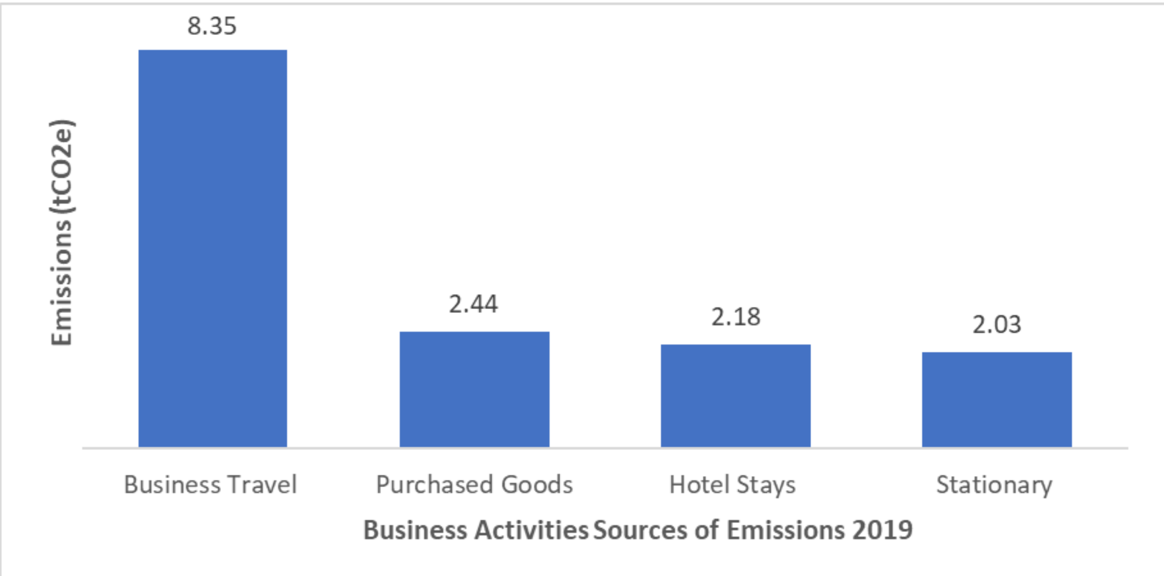
Table 1: Intensity Metrics

Emissions	2019
Total Footprint (tCO2e)	4.88
Staff No - FTE	5
Turnover £million	0.7
Total Footprint/£ M Turnover	**7.2**
Total Footprint/FTE	**1.0**

- **Section 2:**

Section 2 details Permanent Way Institution's carbon emissions associated with their business activities that does not fall within scope of the organisational carbon footprint in Section 1. This includes seminars, training courses, meetings, journals, textbooks, and events/exhibitions. Emissions from business activities amounted to 16.76 tonnes of CO_2e, with the largest source being Business Travel (50%), followed by Purchased Goods (15%) and Hotel Stays (13%) as illustrated in Figure 2.

Figure 2: Business Activities Carbon Emissions (tonnes of CO_2)



INTRODUCTION

Permanent Way Institution retained Ethical Nation to measure the organisational carbon footprint. As per the GHG Protocol, an organisational carbon footprint captures specific company-related emissions drivers, such as business travel. The second part of this report captures the business activities not included in an organisational carbon footprint, such as events and exhibitions.

The section outlines the processes and methodology used in this project. It explains the calculation principles and sets the operational boundaries of the footprint. The following section presents an in-depth analysis of all the emissions sources. This report includes Scope 1 Direct Emissions, Scope 2 Energy Indirect Emissions and Scope 3 Other Indirect Emissions.

The reporting period is 1st January 2019 to 31st December 2019.

1. STANDARD AND SCOPE

1.1 FOOTPRINTING PROCESS

A carbon footprint assessment measures the carbon emissions generated by your organisation's activities. The carbon footprint report is the critical first stage of a comprehensive and commercially focused carbon management plan. To measure your carbon emissions, this report follows the internationally recognized standard ISO-14064-1:2006.

ISO 14064 requires an organisation to report its carbon emissions in three scopes as described below.

- Scope 1 - Direct Emissions - Emissions from greenhouse gas sources owned or controlled by the organisation
- Scope 2 - Energy Indirect Emissions - Emissions from the generation of imported electricity, heat or steam consumed by the organisation
- Scope 3 - Other Indirect Emissions - Emissions which are consequences of an organisation's activities but arise from sources that are owned or controlled by other organisations.

ISO 14064 requires the measurement of carbon emissions arising from Scope 1 and 2. While not required, inclusion of Scope 3 emissions is advised as it can lead to greater understanding of the company's wider impacts.

In this report, the term 'carbon emissions' not only includes carbon dioxide (CO_2) but all other greenhouse gases (GHG) covered under good practice reporting (the Koyoto Protocol): methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC) and sulphur hexafluoride (SF_6).

1.2 SCOPE OF THE FOOTPRINT

ORGANISATIONAL BOUNDARY

In accordance with ISO 14064, the approach used in this footprint is based on the principle of operational control. Under the control approach we accounted for 100% of the GHG emissions from operations over which Permanent Way Institution has control. Control can be defined in either financial or operational terms.

- The financial control approach – Permanent Way Institution has financial control over an operation if it has the ability to direct the financial and working policies of the organisation with a view to gaining economic benefits from its activities.

- The operational control approach – Permanent Way Institution has operational control over an organisation if it or one of its subsidiaries has the full authority to introduce and implement its working policies at the business.

Operational control approach has been used for Permanent Way Institution's footprint calculation.

OPERATIONAL ACTIVITIES

Activities Included in the Scope for the Footprint

In accordance with ISO 14064 the organisational boundaries for this carbon footprint were business journeys, commuting, hotel stays, waste, well-to-tank, stationery/post and deliveries, and employee home working.

1.3 DATA ACCURACY

The data provided by Permanent Way Institution covers the period from January 2019 to December 2019. There were no gaps in the data. Most data was primary, but some data was secondary and extrapolated using benchmark approaches. Ethical Nation collated the supplied data and summarised it in a single summary spreadsheet.

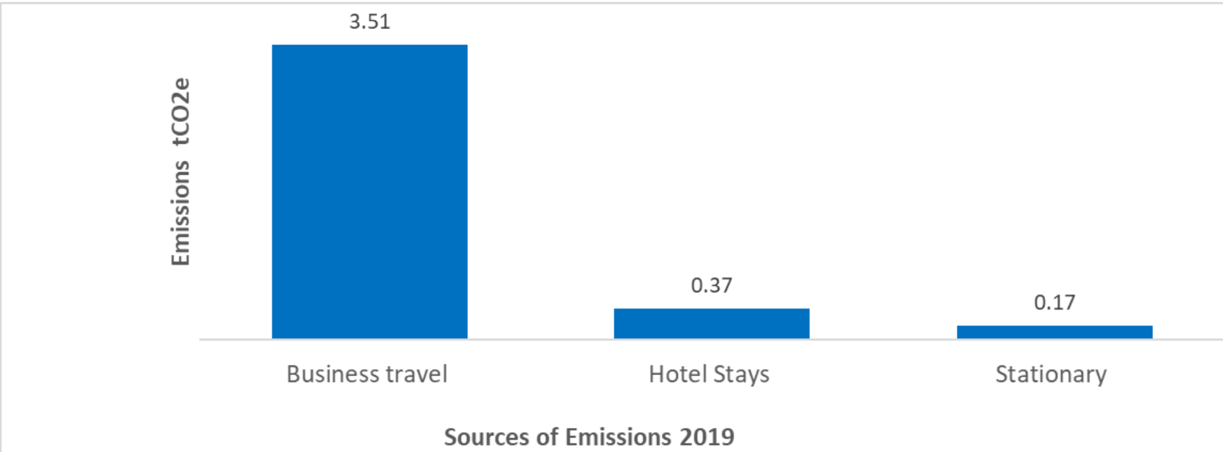
2. Section 1 - Results

2.1 SUMMARY OF RESULTS

EMISSIONS BY ACTIVITY

The results of the project show Permanent Way Institution's organisational carbon footprint for the year January 2019 to December 2019 was **4.88 tonnes of CO_2e**. A breakdown of emissions by activity is shown in the chart below:

Figure 3: Emissions in tonnes of CO_2e by activity



Business Travel in Scope 3 accounted for the largest proportion of emissions (72%) followed by Hotel Stays (8%) and Stationary (3%).

CARBON FOOTPRINT

Table 2 details Permanent Way Institution's organisational carbon footprint by type of emission and activity.

Table 2: Emissions Data

Type of Emissions	Activity	Units	Tonnes of CO_2e	% of Total
Direct (Scope 1)				
	Subtotal		0.0	
Direct (Scope 2)				
	Subtotal		0.0	0%
Indirect Other (Scope 3)	Employee Commuting (gas & electricity)	8.5	0.002	0%
	Business Travel (KM)	43,917	3.507	72%
	Hotel Stays (nights)	20	0.374	8%
	Other			
	Waste (tonne PA)	0.09	0.018	0%
	Delivery (tonne.km)	0.09	0.000	0%
	Stationery (Paper and Post)		0.165	3%
	Well to Tank		0.815	17%
	Subtotal		4.88	100%
TOTAL EMISSIONS (tCO_2e)			4.88	

2.2 SCOPE 1 - DIRECT EMISSIONS

Direct Emissions arise from the generation of greenhouse gases in company-owned or leased assets. In most businesses these arise from consumption of gas in buildings (heating & hot water) and fuels in company-owned vehicles. They also arise as a result of other heating fuels, chemical reactions and gas leakage (fugitive emissions) during manufacturing, production and from air conditioning systems.

Direct Emissions amounted to **0 tonnes of CO_2e** or **0%** of Permanent Way Institution's total footprint. This is because Permanent Way Institution's business model relies on employees working from home, and therefore there are no office spaces which the company has control over and which consume gas, or company -owned vehicles. Any gas that employees use in their own homes is captured in the scope 3 category 'employee commuting', as per the GHG Protocol.

2.3 SCOPE 2 - INDIRECT ENERGY EMISSIONS

Indirect Energy Emissions arise from the generation of imported electricity, heat or steam consumed by the company. As Permanent Way Institution's employees works from home, these emissions are counted under employee commuting.

Indirect Emissions amounted to **0 tonnes of CO_2e** or **0%** of Permanent Way Institution's total footprint. Similarly to scope 1, as Permanent Way Institution does not work from an office, they do not have control over electricity consumption and therefore scope 2 is immaterial.

2.4 SCOPE 3 - INDIRECT OTHER EMISSIONS

Scope 3 comprised 100% of total emissions or **4.88 tonnes of carbon dioxide**. These arise mainly from business travel, hotel stays, and well-to-tank.

Business Journeys

Business journeys made by Permanent Way Institution staff accounted for **3.5 tonnes of CO_2e** (72% of total emissions). By far the majority of business journey emissions come from the use of small and medium petrol cars amounting to **1.98 tonnes of CO_2e** of the emissions. Business travel was also undertaken by rail, however this is less emissions intensive.

Hotel Stays

Hotel stays by Permanent Way Institution's employees accounted for **0.37 tonnes of CO_2e** or 8% of total emissions. These emissions come from 18 nights spent in hotels in the UK, and 2 nights spent in a hotel in Ireland.

Employee Commuting

As Permanent Way Institution's employees work from home there is no commuting activity to work, however, electricity and gas (heat) used in employees homes while they are working is accounted within this category. Electricity and gas used by employees resulted in just **0.002 tonnes of CO2e**. Emissions from employees working from home are therefore negligible. This is testament to the Permanent Way Institution's carbon efficient business model, and also that the majority of employees are on renewable home electricity contracts.

Other Activities

Other activities, excluding the above, resulted in **1 tonne of CO_2e** or 20% of total emissions.

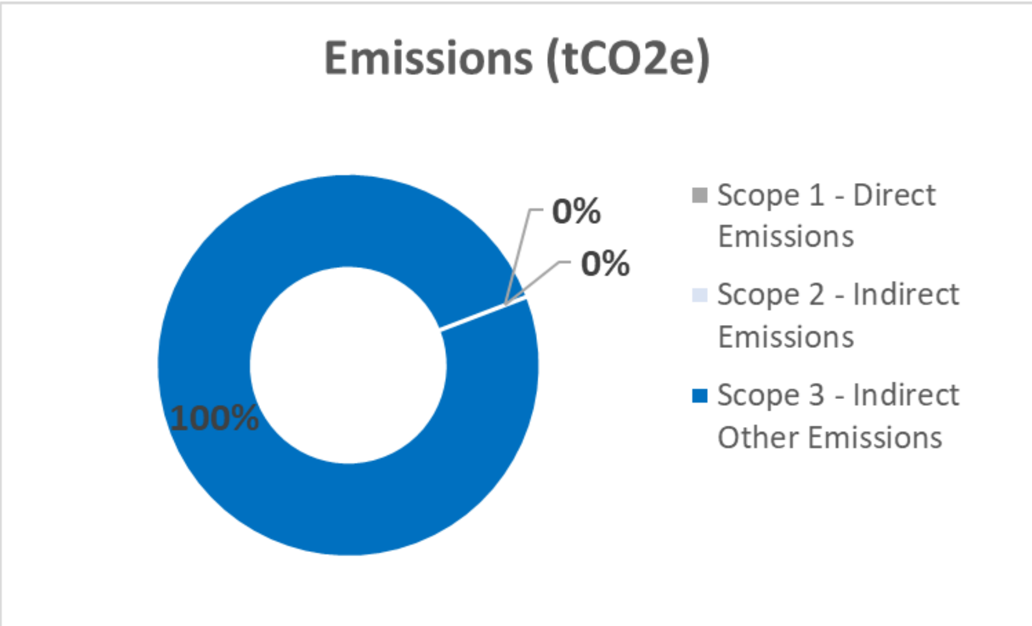
Well-to-tank (WTT) emissions are those emissions associated with the upstream processes of extracting, refining, and transporting raw fuel to the vehicles, asset or process under scrutiny. In the case of Permanent Way Institution, this meant the well-to-tank emissions from business travel. Permanent Way Institution's WTT emissions amounted to **0.81 tCO_2e.** Note that this emissions driver is dependent on other categories, and therefore rises and falls with other activities such as business travel. If Permanent Way Institution reduces business travel, the WTT emissions will subsequently fall.

Permanent Way Institution produces minimal amounts of recycling and landfill **waste**. The total general waste produced is estimated at 0.09 tonnes (0.06 tonnes recycled waste and 0.03 tonnes landfill waste), with **0.018 tCO_2e** produced as a result. This is a negligible emissions driver.

Emissions arising from **stationery and post** were **0.165 tonnes of CO_2e.**

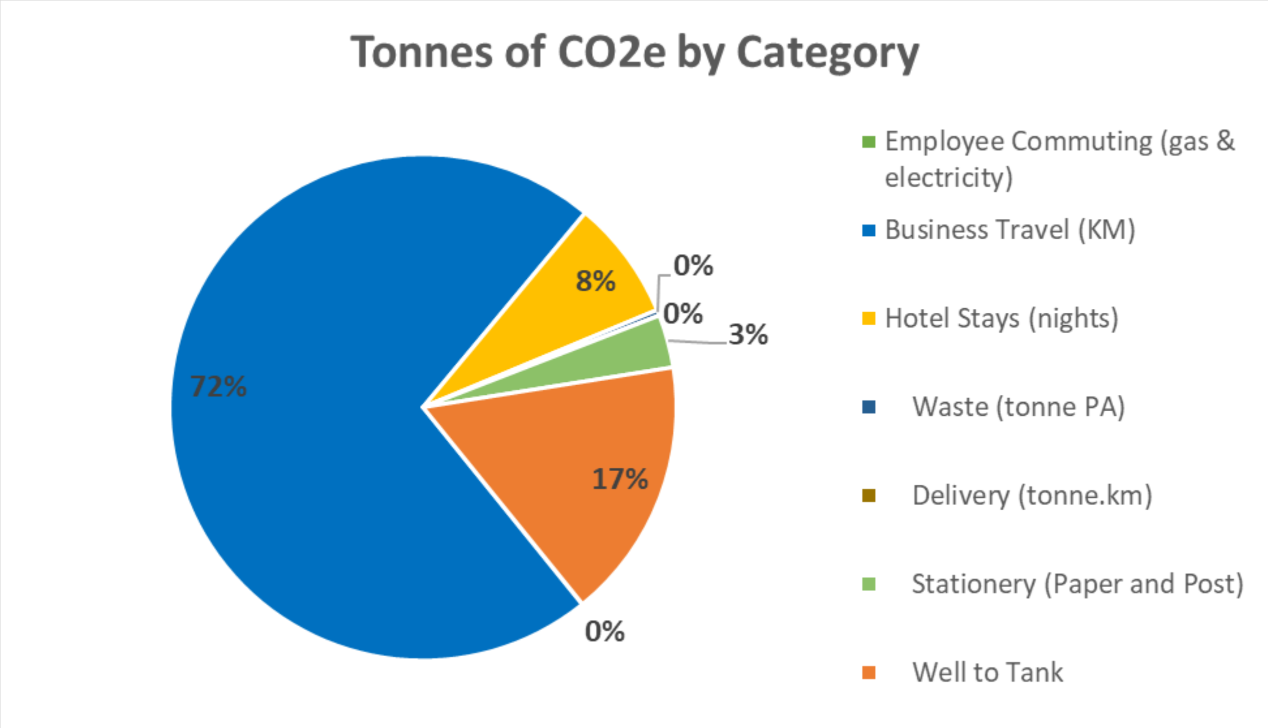
Figure 4 highlights that Permanent Way Institution has no scope 1 and 2 emissions, which is common for companies who don't use office space.

Figure 4: Emissions in tonnes of CO_2e by Scope



2.5 Section 1 – Conclusions and Recommendations

Figure 5: Emissions in tonnes of CO_2e by Scope Category



Ethical Nation has analysed Permanent Way Institution's organisational carbon footprint and are able to provide the following recommendations to reduce emissions. These recommendations are ordered in terms of priority, starting with the highest emissions activity. If undertaken, these recommendations have potential to significantly reduce Permanent Way Institution's carbon footprint.

- As the largest emissions driver, business travel is the area to focus on. Ethical Nation recommend avoiding petrol or diesel vehicles where possible, and instead opting for and promoting the use of hybrid or e-vehicles when travelling. When using apps like Uber, there is often an option to choose an electric vehicle.

- As rail is less emissions intensive, if possible, it is better to travel by train rather than car or taxi.

- Well-to-tank emissions will subsequently fall as business journey and car fuel consumption drops.

- Although often necessary, avoid hotel stays if/when possible. If it is possible to travel back home after an event, this will save money and reduce emissions.

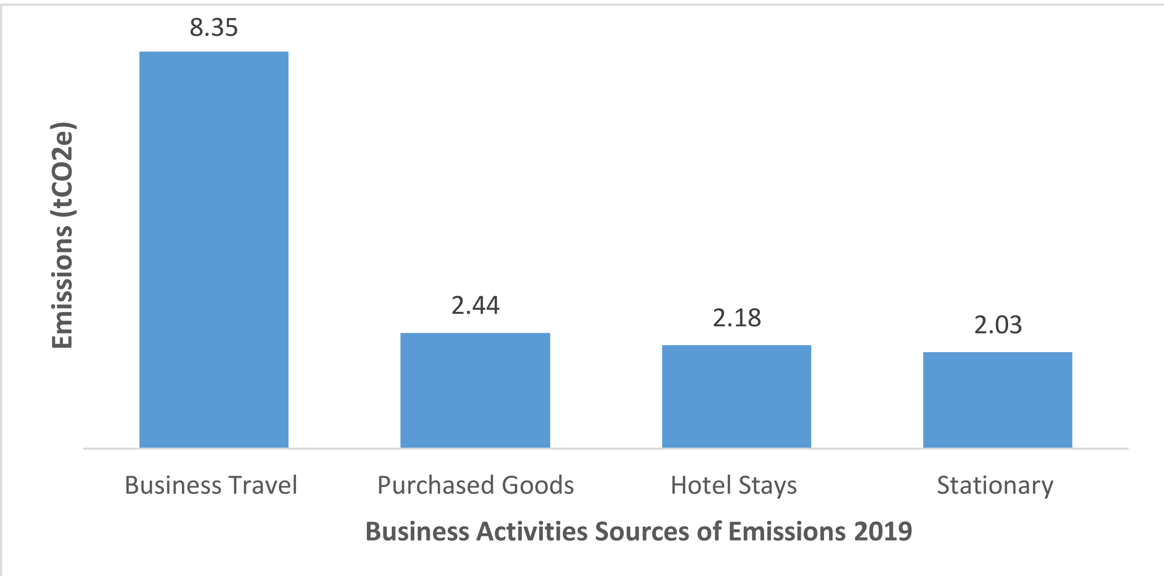
3. Section 2 - Results

3.1 SUMMARY OF RESULTS

EMISSIONS BY ACTIVITY

This section contains the emissions that do not fall within the organisational carbon footprint in Section 1. It provides a more detailed view of Permanent Way Institution's emissions from business activities, including stationary (i.e., textbooks, journals, brochures), and the overall emissions in relation to seminars, meetings, courses, exhibitions, and events (hereafter events) held by Permanent Way Institution. The results show that these activities amount to **16.76 tonnes of CO_2e**, with the majority coming from Business Travel (50%), followed by Purchased Goods (15%) and Hotel Stays (13%) – as illustrated in Figure 6.

Figure 6: Emissions in tonnes of CO_2e by activity



CARBON FOOTPRINT

Table 3 details Permanent Way Institution's carbon footprint for their business activities by type of emissions and activity.

Table 3: Emissions Data

Type of Emissions	Activity	Units	Tonnes of CO_2e	% of Total
Business Activities	**Business Travel (km)**	163220	**8.35**	**50%**
	Hotel Stays (Nights)	125	**2.18**	**13%**
	Fuels & Electricity		**0.02**	**0%**
	Other Activities			
	Purchased Goods (Food & Drinks in £)	15470	**2.44**	**15%**
	Stationary (Paper & Postage)		**2.03**	**12%**
	Well-to-Tank		**1.7**	**10%**
TOTAL EMISSIONS (tCO_2e)			**16.76**	**100%**

3.2 EMISSIONS BY ACTIVITY

Business Travel

Business travel as part of the various events accounts for **8.35 tonnes of CO_2e** or 50% of total emissions, with rail travel being the highest contributor at **6.21 tonnes of CO_2e.** Note that in this case, business travel accounts for all travel undertaken to arrive and get home from Permanent Way Institution's seminars, training courses, and events/exhibitions. As these journeys are undertaken at the discretion of the attendee, they are outside of scope of an organisational footprint.

Hotel Stays

As part of some of the events, the delegates and attendees spent a total of 125 nights in hotels. This amounted to **2.18 tonnes of CO_2e** or 13% of total emissions.

Power Tools

One of the events required the use of some small hand-held devices. These devices were estimated to use approximately 0.72kWh and 10 litres of petrol in total which amounted to **0.02 tonnes of CO_2e** or 0% of total emissions.

Purchased Goods

Purchased goods covers the overall food and drinks spent from all the events, this totalled £15,470 and resulted in **2.44 tonnes of CO_2e** or 15% of total emissions.

Stationary

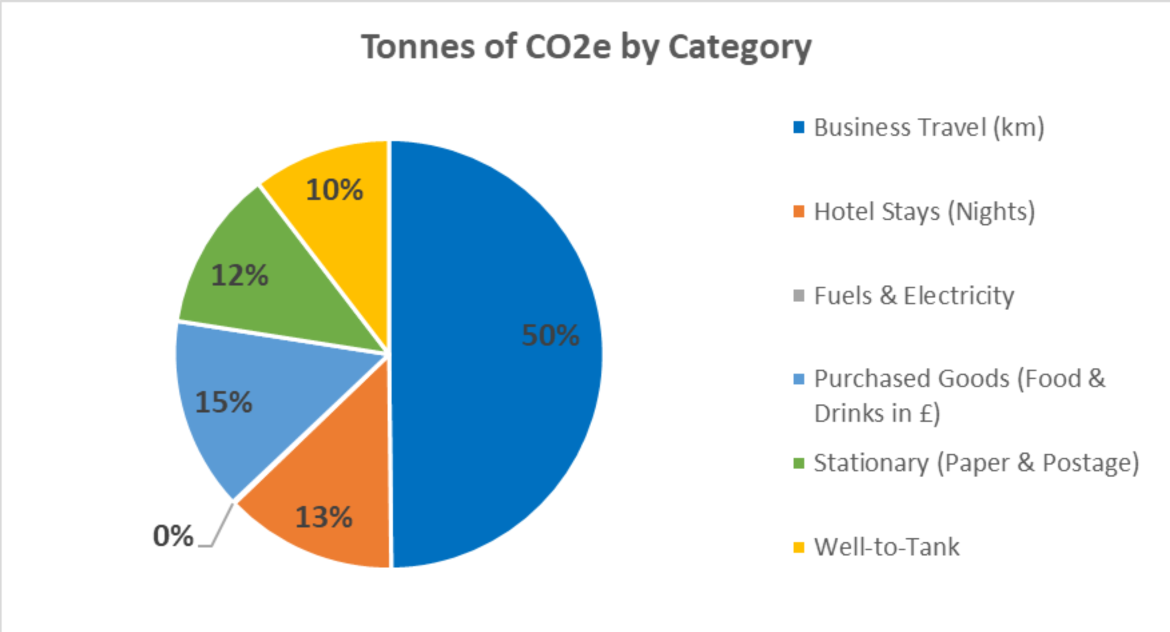
Stationary covers brochures, textbooks, journals used for the various events as well as postage. The emissions amounted to **2.03 tonnes of CO_2e** or 12% of total emissions.

Well-to-Tank

Well-to-tank (WTT) emissions are those emissions associated with the upstream processes of extracting, refining, and transporting raw fuel to the vehicles, asset or process under scrutiny. For business activities these emissions amounted to **1.7 tCO_2e** or 10% of total emissions, almost all from travelling to and from events. Note that this emissions driver is dependent on other categories, and therefore rises and falls with other scopes.

3.3 Section 2 - Conclusion and Recommendations

Figure 7: Emissions in tonnes of CO_2e by Scope Category



After reviewing Permanent Way Institution's Business Activties footprint, the following recommendations is advised to reduce emissions. These will not reduce Permanent Way Institution's organisational carbon footprint, but will help the environment.

- If possible, take advantage of the move to online conferences and host some conferences online. These will lead to significant reductions in travel, which is the largest emissions driver.
- When hosting seminars, training courses and events, if possible try and keep the activitiy to one day. This reduces the need for hotel stays, the third largest emissions driver.
- As travel emissions reduce, well-to-tank emissions will also fall.
- Rather than providing physical paper materials, where appropriate use electronic materials. Emissions from loading a PDF or web page are much lower than printing on paper.