Corporate Greenhouse Gas Inventory

Scope 1, 2 and partial 3

On behalf of Vado | 2021 Fiscal Year

THG / ECO

MY CARBON

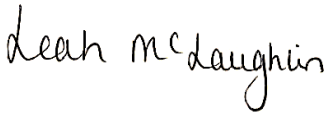
A Greenhouse Gas inventory produced by The Hut Group and MyCarbon, an inventory service provided by Carbon Green Ltd.

24 October 2022

MyCarbon Formal Notes

Project No.:	Vado 2021
Title:	Vado Corporate GHG Report
Client:	Vado
Date:	24 October 2022
Reporting Period:	From April 2021 to April 2022

Leah McLaughlin
Consultant at MyCarbon



DATE 09/09/22

Dr. Toby Green
Co-Founder & Director at MyCarbon

DATE 09/09/22

Client Formal Notes

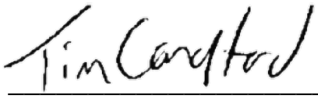
Data of appropriate quality to satisfy the goal and scope of the Greenhouse Gas Inventory will be used, inclusive of defining expectations in terms of the five main reporting principals of transparency, relevance, accuracy, consistency, completeness.

Accuracy of a GHG assessment is directly related to the quality of the activity data provided from the client. This primary data representative of activities occurred during the reporting period will always be used where available. In certain circumstances, secondary data in the form of estimates, extrapolations and/or industry averages 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. It should be expected that all clients should aim to improve the proportion of primary data over time.

If Vado are satisfied with the information above and the data provided is representative of authentic client activities within the reporting period of the 2021 fiscal year, please sign below:

Company Name: Vado

Client Representative: Tim Langford

Client Signature: 

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1 Certificate of Offset Status

1.1 MyCarbon's dedicated team has analysed the scope and emissions to be offset which are displayed in the certificate table below.

Table 1 | Certification summary of offset status

Organisation:		THG Eco x Vado		
Certification of Offset Status:		Complete		
Reporting Period:		April 2021 – April 2022		
Scope	**Emission Source Category**	**Required or Recommended**	**Coverage**	**tCO_2**
1	Direct emissions from combustion of natural gas, LPG, petrol, and diesel	X	Yes	173.70
2	Indirect emissions from the generation of purchased electricity, heat, steam or cooling	X	Yes	54.52
3	Business Travel	X	Yes	24.60
	Transportation of goods			
	Purchased goods & services			
	Waste generated in operations			
	Leased assets & capital goods			
	Investments & franchises			
	Employee commuting & home working			
Offset total (tCO_2e)				**252.82**

2 Introduction

2.1 This is a greenhouse gas (GHG) inventory report for Vado, a division of Norcross group (holdings) limited, for the 2021 fiscal year, produced by The Hut Group and MyCarbon, the latter a brand owned by Carbon Green Ltd.

Vado is a leading British bathroom brassware manufacturer providing high quality taps, showers, accessories and fittings to customers across the globe.

This report follows the five main reporting principals as outlined by ISO 14064-1:

- Transparency: Address all relevant issues in a factual and coherent manner, based on a clear audit trail. Disclose any relevant assumptions and make appropriate references to the accounting and calculation methodologies and data sources used.
- Relevance: Ensure the GHG inventory appropriately reflects the GHG emissions of the company and serves the decision-making needs of users – both internal and external to the company
- Accuracy: Ensure that the quantification of GHG emissions is systematically neither over nor under actual emissions, as far as can be judged, and that uncertainties are reduced as far as practicable. Achieve sufficient accuracy to enable users to make decisions with reasonable assurance as to the integrity of the reported information.
- Consistency: Use consistent methodologies to allow for meaningful comparisons of emissions over time. Transparently document any changes to the data, inventory boundary, methods, or any other relevant factors in the time series
- Completeness: Account for and report on all GHG emission sources and activities within the chosen inventory boundary. Disclose and justify any specific exclusions

Vado has compiled a GHG inventory report for the 2021 fiscal year to better understand their emissions and carbon footprint.

This report presents the findings of this exercise. The report follows the ISO 14064-1 standard entitled *Specification with Guidance at the Organisation Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals*. The report will be made publicly available at https://www.vado.com/carbon-policy.

3 Context

3.1 What is the importance of measuring greenhouse gases (GHGs)?

GHG emissions are contributing to global warming and climate change, which have been recognised as a key sustainable development issue. Many governments through local and international efforts are taking steps to reduce GHG emissions through national policies that include the introduction of emissions trading programs, voluntary programs, carbon or energy taxes, and regulations and standards on energy efficiency and emissions. As a result, companies must be able to understand and manage their GHG risks if they are to ensure long-term success in a competitive business environment, and to be prepared for future national or regional climate policies.

Quantification of GHGs emitted by a business or organisation's activities in the form of a carbon footprint is an important tool used by stakeholders to recognise their impact and take action, often through offsetting activities.

Offsetting is a particular method employed to reduce, remove, or prevent the release of GHG emissions into the atmosphere, which can be done through the purchase and retirement of carbon credits. Due to the tight control on carbon credits, retirement of a credit is the only method one can do to offset their carbon footprint. For example, if a business produced 100 tonnes of CO2, they would need to purchase and retire 100 carbon credits to become carbon neutral.

3.2 Reporting standards

When performing a GHG inventory, these assessments should align with one of two recognised standards for accounting and reporting corporate GHG emissions. The most well-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 specification series, detailing specification and guidance for the organisation and project levels, as well as for the validation and verification of emissions.

Data supplied by clients is used in GHG assessments, which is quantified into GHG emission estimates by applying relevant and up-to-date emission factor(s) from reputable sources, like DEFRA. An emission factor is a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant. Quality and accuracy of emission factors can vary between government publications and scientific research journals, therefore it is best practice to apply emission factors only from reputable sources, such as DEFRA.

GHG assessments quantify all six Kyoto Protocol GHGs, where 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 a period of 100 years. The six Kyoto Protocol gases 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 GHG is presented in Table 2.

Table 2 | GHGs listed in the Kyoto Protocol and their Global Warming Potential (GWP)

Greenhouse Gas	Chemical Formula	GWP (CO_2e)
Carbon dioxide	CO_2	1
Methane	CH_4	25
Nitrous oxide	N_2O	298
Hydro fluorocarbons	HFCs	Depends on gas
Sulphur hexafluoride	SF_6	22,800
Perfluorinated compounds	PFCs	Depends on gas

3.3 Emissions Scopes

Emission sources can be broken down into three distinct categories called Scopes.

3.3.1 Scope 1

Scope 1 accounts for the direct GHG emissions occurring from sources that are owned or controlled by the company, for example, emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc.; emissions from chemical production in owned or controlled process equipment.

3.3.2 Scope 2

Scope 2 accounts for GHG emissions from the generation of purchased electricity, heat or steam consumed by the company. Purchased electricity, heat or steam is defined as electricity, heat or steam that is purchased or otherwise brought into the organizational boundary of the company. Scope 2 emissions physically occur at the facility where electricity, heat or steam is generated.

3.3.3 Scope 3

Scope 3 is an optional reporting category that allows for the treatment of all other indirect emissions. Scope 3 emissions are a consequence of the activities of the company but occur from sources not owned or controlled by the company. Some examples of scope 3 activities are extraction and production of purchased materials, transportation of purchased fuels and use of sold products and services.

The GHG Protocol describes the quantification of Scope 1 and 2 as mandatory, whereas Scope 3 emissions are considered optional. Depending on the nature/remit of an organisation, Scope 3 activities can contribute a significant proportion of overall emissions, and therefore to gain a proper understanding of an organisation's GHG emissions it is advisable to include all relevant sources.

4 Methodology

4.1 Emission Factors

The methodologies used to collect and assess the emissions data varied throughout the inventory. The primary methodology used was multiplying GHG activity data by appropriate GHG emission factors. All methodologies were selected based on their ability to provide accurate and consistent results. The use of activity data and emission factors was feasible due to the availability of both accurate activity data and emission factors from reputable organisations.

MyCarbon uses the latest figures from DEFRA and peer reviewed literature for all common emission factors listed in Table 3.

4.1.1 Calculating Emissions from Electricity Consumption

There are two methods for calculating emissions from electricity consumption: the location-based and market-based methods.

The location-based method is used to calculate emissions based on the emissions intensity of the local grid area where the electricity usage occurs. The market-based method calculates emissions on the basis that the company has chosen to purchase renewable electricity.

Electricity consumption from Vado has been calculated using both these methods. As the energy consumed in the Chinese office and building 3 is sourced entirely from the grid, grid emissions factors were used in place of a market-based emissions factor when calculating under the market-based approach.

It is also important to note that the kWh recorded for the location-based and market-based approaches differ as the energy provider is switched over throughout the year.

Table 3 | Emission factors used in this assessment

Category	Emission Factor	Reference
Natural gas	0.18 kg CO_2e / kWh	(DEFRA, 2021)
LPG	1.56 kg CO_2e / litre	(DEFRA, 2021)
Petrol (average biofuel blend)	2.19 kg CO_2e / litre	(DEFRA, 2021)
Diesel (average biofuel blend)	2.51 kg CO_2e / litre	(DEFRA, 2021)
Electricity (UK, location-based)	0.21 kg CO_2e / kWh	(DEFRA, 2021)
Electricity (UK, market-based)	0.09 kg CO_2e / kWh	(E.ON Next, 2021)
Electricity (China, location-based)	0.80 kg CO_2e / kWh	(IGES, 2021)

Domestic flights, economy	0.25 kg CO_2e / passenger.km	(DEFRA, 2021)
International flights, economy	0.14 kg CO_2e / passenger.km	(DEFRA, 2021)
International flights, pre-econ	0.23 kg CO_2e / passenger.km	(DEFRA, 2021)
Short haul flight, economy	0.15 kg CO_2e / passenger.km	(DEFRA, 2021)
Long haul flight, economy	0.15 kg CO_2e / passenger.km	(DEFRA, 2021)
Long haul flight, business	0.43 kg CO_2e / passenger.km	(DEFRA, 2021)
National rail	0.04 kg CO_2e / passenger.km	(DEFRA, 2021)
London underground	0.03 kg CO_2e / passenger.km	(DEFRA, 2021)
Black taxi	0.31 kg CO_2e / passenger.km	(DEFRA, 2021)
Regular taxi	0.21 kg CO_2e / passenger.km	(DEFRA, 2021)

4.2 Organisational Boundaries

The GHG Protocol Corporate Standard outlines two approaches for consolidating GHG data—the equity share approach and the control approach—through organizational boundaries. These are boundaries that determine the operations owned or controlled by the reporting company, depending on the consolidation approach taken. In some cases, it may be possible to apply these approaches directly to emissions/removals associated with sequestered atmospheric carbon.

The GHG inventory report covers all Scope 1, 2 and partial Scope 3 emissions for Vado. Details of the site included within the organizational boundary of this report are detailed below:

VADO,
Wedmore Road,
Cheddar,
Somerset,
England BS27 3EB

Vado has compiled a GHG inventory report for the 2021 fiscal year to better understand their emissions and carbon footprint. The corporate organizational boundaries for the inventory were defined according to the requirements of **clause 4.1 of the ISO 14064-1 standard.** The control approach was used for the consolidation of corporate GHG emissions.

4.3 Identified Emissions and Exclusions

The following emissions were determined to be relevant within the organizational boundaries:

Scope 1

- Natural gas consumption
- LPG consumption
- Petrol consumption
- Diesel consumption

Scope 2

- Purchased electricity

Scope 3 (partial)

- Business travel including flights, rail and taxis

Excluded Emissions

The following emissions were excluded per request by Vado.

- Purchased goods and services
- Capital goods
- Upstream & downstream transportation
- Waste generated
- Employee commuting
- Use of sold goods
- End of life treatment of
- Processing of sold goods
- Upstream & downstream leased assets
- Franchises
- Investments

5 Scope 1 Emissions

5.1 Summary of Scope 1 Emissions

Scope 1 emissions totalled 165.43 tonnes CO_2e for the 2021 fiscal year. The largest portion of Scope 1 emissions arose from the consumption of diesel, 83.79 tonnes CO_2e. Gas consumption across the three sites produced a total of 68.4 tonnes CO_2e. The smallest portion of Scope 1 emissions was produced from the consumption of petrol, 10.65 tonnes CO_2e, and LPG, 2.59 tonnes CO_2e.

Table 4 | t CO_2e within Scope 1

Category	t CO_2e
Building 1 gas	13.97
Building 2 gas	18.37
Building 3 gas	36.06
LPG	2.59
Petrol	10.65
Diesel	83.79
Total	**165.43**

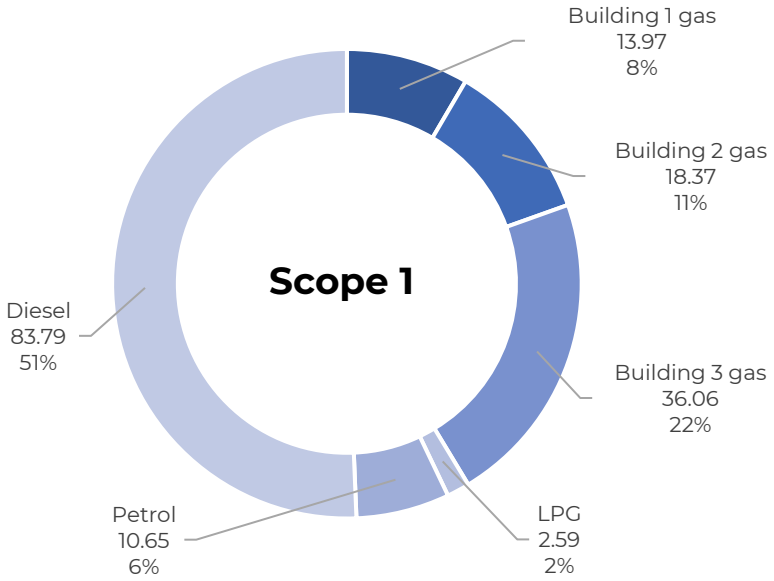

Figure 1 | % of Emissions and t CO_2e within Scope 1

6 Scope 2 Emissions

6.1 Electricity Consumption using Location-Based Approach

Table 5 | t CO_2e within Scope 2

Category	t CO_2e
Electricity building 1 (location-based)	2.53
Electricity building 2 (location-based)	7.02
Electricity building 3 (location-based)	33.92
Electricity Glastonbury (location-based)	3.97
Electricity China (location-based)	4.48
Total	**51.92**

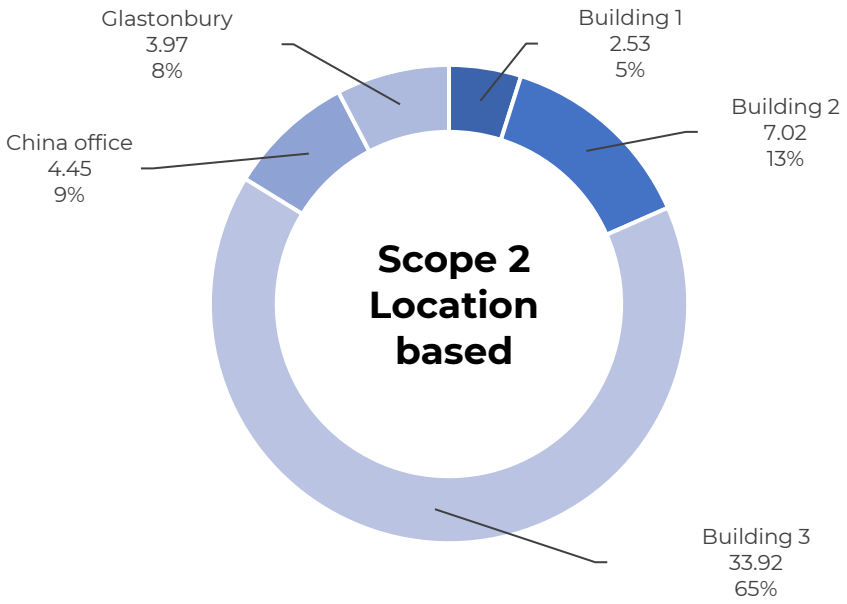

Figure 2 | % of Emissions and t CO_2e within Scope 2- Location Based Method

6.2 Electricity Consumption using Market-Based Approach

Table 6 | t CO_2e within Scope 2

Category	t CO_2e
Electricity building 1 (market-based)	2.04
Electricity building 2 (market-based)	4.04
Electricity building 3 (market-based)	33.92
Electricity Glastonbury (market-based)	1.91
Electricity China (market-based)	4.48
Total	**46.39**

Category	t CO_2e
Electricity building 1 (location-based)	2.53
Electricity building 1 (market-based)	2.04
Electricity building 2 (location-based)	7.02
Electricity building 2 (market-based)	4.04
Electricity building 3 (location-based)	33.92
Electricity building 3 (market-based)	33.92
Electricity Glastonbury (location-based)	3.97
Electricity Glastonbury (market-based)	1.91
Electricity China (location-based)	4.48
Electricity China (market-based)	4.48
Total	**98.31**

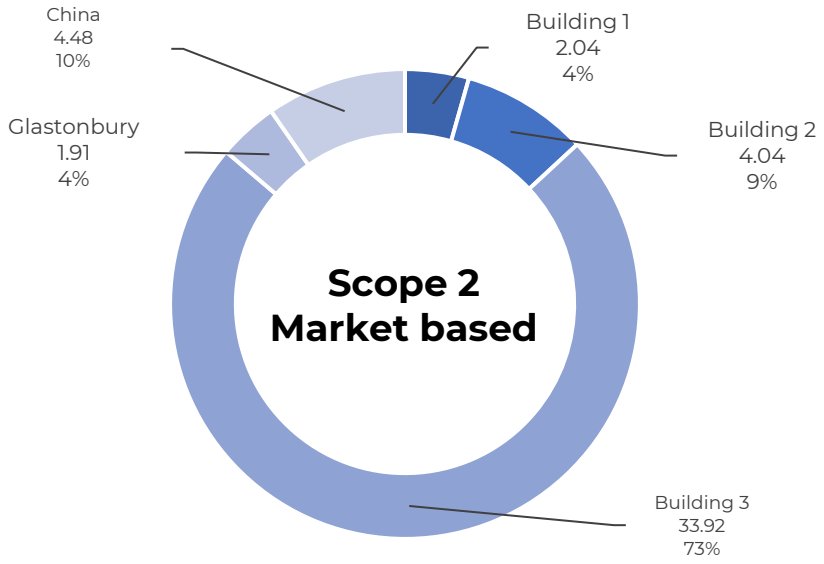

Figure 3 | % of Emissions and t CO_2e within Scope 2- Market Based Method

6.3 Summary of Scope 2 Emissions

Scope 2 emissions only arose from purchased electricity. When taking the location-based approach, total Scope 2 emissions equalled 51.92 tonnes CO_2e, predominately produced via building 3. When taking the market-based approach, Scope 2 emissions equalled 46.39 tonnes CO_2e.

7 Scope 3 Emissions

Table 6 | t CO_2e within Scope 3

Category	t CO_2e
Flights	23.40
Rail travel	1.75
Taxis	0.89
Total	**26.04**

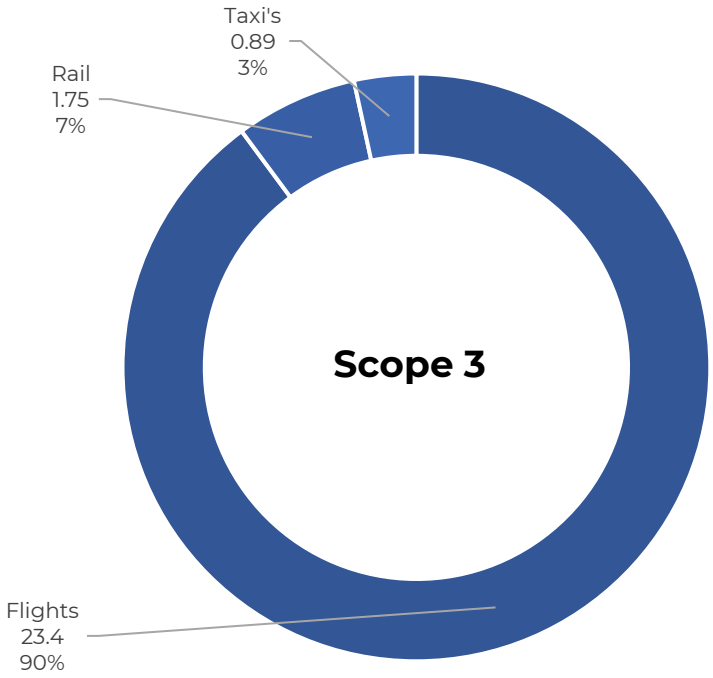

Figure 4 | % of Emissions and t CO_2e within Scope 3

Table 7 | t CO_2e within Scope 3- Flights

Category	t CO_2e
Domestic economy	3.55
International economy	8.13
International prem economy	1.06
Short haul economy	1.03
Long haul economy	4.94
Long haul business	4.71
Total	**23.42**

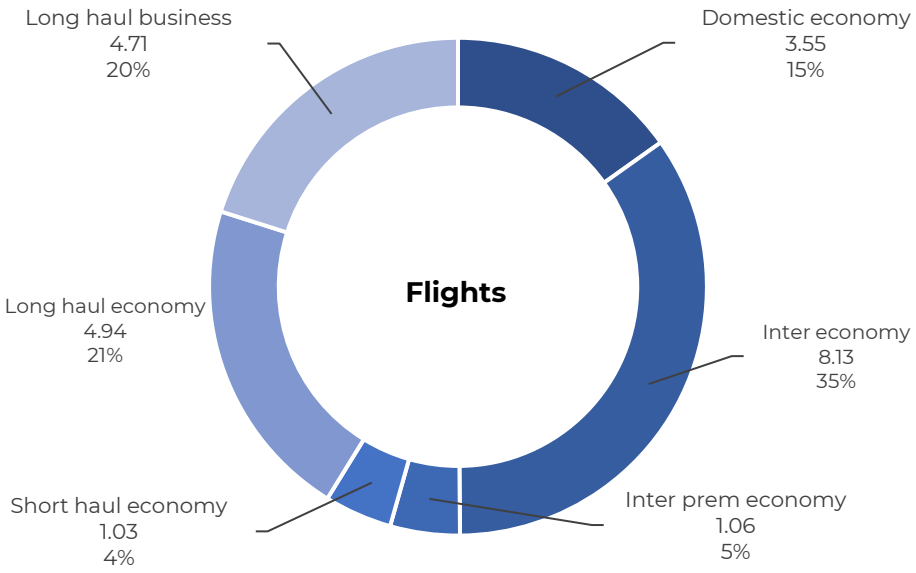

Figure 5 | % of Emissions and t CO_2e within Scope 3- Flights

Table 8 | t CO_2e within Scope 3-Rail

Category	t CO_2e
National rail	1.74
London underground	0.01
Total	**1.75**

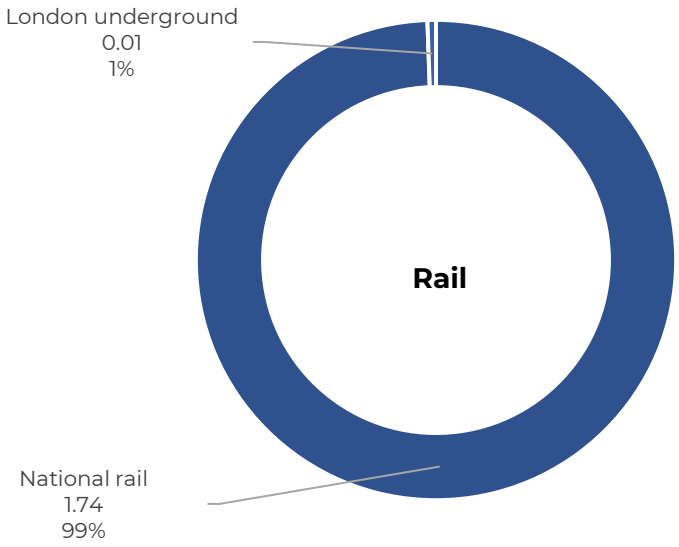

Figure 6 | % of Emissions and t CO_2e within Scope 3-Rail

Table 9 | t CO_2e within Scope 3- Taxi's

Category	t CO_2e
Black cab	0.25
Regular cab	0.64
Total	**0.89**

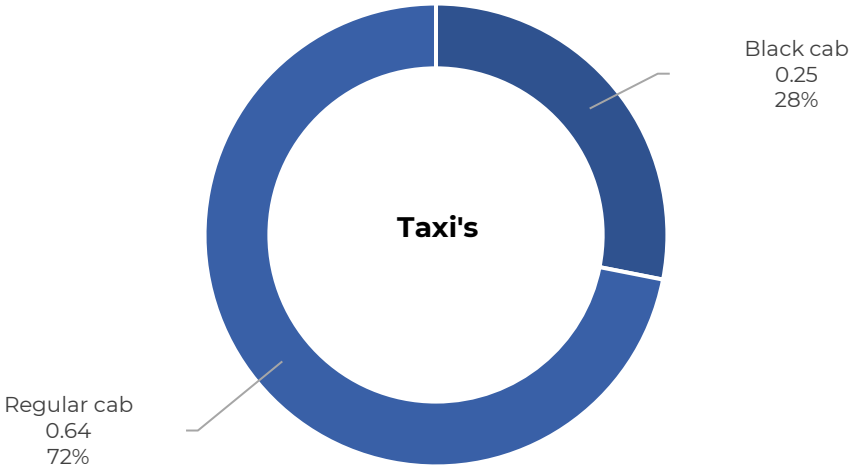

Figure 7 | % of Emissions and t CO_2e within Scope 3- Taxi's

7.1 Summary of Scope 3 Emissions

Scope 3 emissions focused entirely on business travel, totalling 26.04 tonnes CO_2e for the 2021 fiscal year. The largest portion of Scope 3 emissions were produced from business travel, most notably the flights taken throughout the year. Long-haul flights produced, 9.65 tonnes CO_2e (37% of Scope 3 emissions). International flights produced 9.19 tonnes CO_2e. Domestic flights and short haul flights were responsible for 3.55 and 1.75 tonnes CO_2e respectively.

Rail travel resulted in the second largest source for Scope 3 emissions, producing 1.75 tonnes CO_2e. National rail travel was the majority source of CO_2e for rail, resulting in 99% of emissions. The London underground constitutes the remainder.

The lowest source of emissions within Scope 3 arose from business travel taken using taxis. This amounted to 0.89 tonnes CO_2e.

8 Emissions Summary

8.1 Summary of All Emissions under Location-based Approach

Taking the location-based approach, the total emissions for Vado for the 2021 fiscal year equalled 240.77 tonnes CO_2e. With a 5% buffer added as industry standard, the carbon footprint of Vado is 252.80 tonnes CO_2e.

Under the location-based approach, Scope 1 emissions resulted in approximately 69% of total emissions from Vado, 165.43 tonnes CO_2e. Scope 2 resulted in 21% of total emissions, 51.92 tonnes CO_2e. Scope 3 made up approximately 10% of total emissions 23.42 tonnes CO_2e.

8.2 Summary of All Emissions under Market-based Approach

Taking the market-based approach, the total emissions for Vado for the 2021 fiscal year equalled 235.24 tonnes CO_2e. With a 5% buffer added as industry standard, the carbon footprint of Vado is 247.00 tonnes CO_2e.

Under the market-based approach, Scope 1 emissions resulted in approximately 70% of total emissions from Vado, 165.43 tonnes CO_2e. Scope 2 resulted in 20% of total emissions, 46.39 tonnes CO_2e. Scope 3 made up approximately 10% of total emissions 23.42 tonnes CO_2e.

References

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[3] Institute for Global Environmental Strategies, 2022. List of Grid Emission Factors, version 10.12. Available at: https://pub.iges.or.jp/pub/iges-list-grid-emission-factors [Accessed 05 October 2022].

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