



**Carbon Footprint Verification Report**  
for  
**Volex Plc**  
**01 June 2023**

## Verification summary

Verifiers:	James Fryer, Environmental Consultant, Carbon Footprint Ltd
Report reviewed by:	Jenny Webb, Senior Environmental Consultant, Carbon Footprint Ltd
Authorised by:	Dr. Wendy Buckley, Client Director / Co-Founder Carbon Footprint Ltd, Carbon Footprint Ltd
Inventory period verified:	1 <sup>st</sup> April 2022 to 31 <sup>st</sup> March 2023
Level of assurance:	Limited
Assurance being given to:	Alan Taylor, Group HR Director Unit C1 Antura, Bond Close, Basingstoke, Hampshire, RG24 8PZ, United Kingdom
Verification Standard:	ISO 14064-3: 2019
Methodology used for the calculation:	ISO14064-3 standard

## Statement of verification

Alan Taylor

Group HR Director

Volex plc

Unit C1 Antura, Bond Close, Basingstoke, Hampshire, RG24 8PZ, United Kingdom

01 June 2023

### Scope

Volex Plc (henceforth referred to as Volex engaged Carbon Footprint Ltd to verify Volex's carbon footprint assessment and supporting evidence for the period 1<sup>st</sup> April 2022 to 31<sup>st</sup> March 2023. Volex is responsible for the information within the carbon footprint report. The responsibility of Carbon Footprint Ltd is to provide a conclusion as to whether the statements made are in accordance with the ISO14064-3 standard.

### Methodology

The verification was led by James Fryer, Environmental Consultant, Carbon Footprint Ltd. Carbon Footprint Ltd completed the review in accordance with the ['ISO 14064 Part 3 \(2019\): Greenhouse Gases: Specification with guidance for the verification and validation of greenhouse gas statements'](#). The work was undertaken to provide a limited level of assurance with respect to the GHG statements made. Carbon Footprint Ltd believes that the review of the assessment and associated evidence, coupled with this subsequent report, provides a reasonable and fair basis for our conclusion.

The following data was within the scope of the verification (below shows the post-audit results):

Scope 1:	Company Owned Vehicles, On-site fuel use, Refrigerants, Electricity, heat or steam generated on-site	829 tCO <sub>2</sub> e
Scope 2:	District heating, On-site consumption of purchased electricity	19,333 tCO <sub>2</sub> e (Gross location-based) 19,170 tCO <sub>2</sub> e (Net location-based)*
Scope 3:	Hire cars, District heating transmission and distribution, Employee-owned car travel (grey fleet), Transmission and Distribution	1,844 tCO <sub>2</sub> e (location-based)
<b>Subtotal (Scopes 1,2 and 3)</b>		<b>22,007 tCO<sub>2</sub>e (Gross location-based)</b> <b>21,845 (Net location-based)*</b>

\*Net-location based = accounting for renewable energy (adjusted)

### Assurance opinion

Based on the results of our verification process, Carbon Footprint Ltd provides limited assurance of the GHG emissions statement, **and found no evidence that the GHG emissions statement:**

- is not materially correct and is not a fair representation of the GHG emissions data and information;
- has not been prepared in accordance with the ISO14064-3 standard.

It is our opinion that Volex has established appropriate systems for the collection, aggregation and analysis of quantitative data for determination of GHG emissions for the stated period and boundaries.

James Fryer, *BSc (Hons), MSc*  
Environmental Consultant

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## 1 Introduction

Volex Plc (henceforth referred to as Volex) is a leading integrated manufacturing specialist for performance-critical applications and power products. Volex Plc employees 7,650 people and operates 19 manufacturing sites, 1 warehouse and 19 offices across the world.

This report provides the outcomes of the independent verification of Volex's global Greenhouse Gas (GHG) statement for the period 1<sup>st</sup> April 2022 to 31<sup>st</sup> March 2023. The scope of the assessment is defined in section 2.

The verification was based on an assessment of Volex's 2022/2023 carbon footprint report/calculations (version received on 10 May 2023), supplemented with a remote audit and review of supporting evidence. A verification plan (Appendix 1) was devised at the preliminary stages of the assessment to guide the verification process. The sampling plan in Appendix 2 lists the documents submitted for verification (this does not include any additional documents viewed during the remote audit).

The verification was completed in line with the International Standard ['ISO 14064 Part 3 \(2019\): Greenhouse Gases: Specification with guidance for the verification and validation of greenhouse gas statements'](#) to a limited assurance level.

The pre-defined materiality threshold is 5% of the total inventory. Quantitative discrepancies were calculated individually to understand the impact of them as a percentage of the GHG statement. The verification team also determined whether, in their judgement, any qualitative discrepancies could affect the overall GHG statement and, in turn, have a material impact on the decisions of the intended user.

## 1.1 Objectives

The objectives are:

- To provide assurance to Volex, to ISO14064-3 standard, that the GHG statement is reliable and of sufficient quality.
- To provide a verification statement for annual reporting and tracking towards internal targets.

## 1.2 Scope of verification

The GHG statement that is being verified is Volex's global carbon footprint for the period 1<sup>st</sup> April 2022 to 31<sup>st</sup> March 2023.

**The GHG emissions have been consolidated through the financial control approach and are reported in terms of carbon dioxide equivalent (CO<sub>2</sub>e).**

## 1.3 Materiality

A qualitative and quantitative evaluation of any errors, limitations or misrepresentations has been undertaken. The verification team, using professional judgment, determined whether any qualitative discrepancies could affect the overall GHG statement and, in turn, have a material impact on the decisions of the intended user.

Quantitative discrepancies were calculated individually to understand the impact of them as a percentage of the GHG statement. The pre-defined materiality threshold is 5% of the total inventory.

## 1.4 Responsibility

Volex is responsible for the provision of the GHG statement and the supporting information. Carbon Footprint Ltd was contracted to provide a third-party verification of this statement, to a limited level of assurance. Appendix 3 provides a profile of the verification team.

## 1.5 The work undertaken

The verification undertaken by Carbon Footprint Ltd was conducted in accordance with ISO 14064-3 (2019): Greenhouse gases-part 3: *'Greenhouse Gases: Specification with guidance for the verification and validation of greenhouse gas statements*. A verification plan (including sampling) was devised at the preliminary stages of the assessment to guide the verification process (see appendices).

In conformance with the ISO 14064-3 standard, the following activities were undertaken:

- Initial review of the GHG documentation and methodologies, including historical GHG data for the period 1<sup>st</sup> April 2022 to 31<sup>st</sup> March 2023.
- remote audit, involving discussions with staff from Volex regarding:
  - Scope of calculation (including appraisal boundaries).
  - Input data sets, any missing data, estimations made and assumptions.
  - Calculation methodology and conversion factors used.
  - Quality control procedures.
  - Results & interpretation.

## 1.6 Independence

The verifier has remained independent from activity taken to calculate the GHG statement. The verifier has maintained objectivity during the audit, basing conclusions on evidence obtained during the audit.

## 1.7 Abbreviations

GHG	Greenhouse Gas
ISO	International Organisation for Standardisation
kWh	Kilowatt Hours
tCO <sub>2</sub> e	Tonnes of Carbon Dioxide Equivalent

## 2 Verification results

### 2.1 Assessment of the GHG information system and its controls

#### 2.1.1 Boundary and data selection

##### **Organisational boundary**

The GHG emissions have been consolidated through the financial control approach and are reported in terms of carbon dioxide equivalent (CO<sub>2</sub>e), for the global operations. The following sites are within the scope of the assessment:

- Manufacturing sites
- Offices

##### **Reporting boundary**

The financial boundary was reviewed and has been determined that all material emission sources have been captured within the assessment boundary. This is summarised below.

<b>Scope 1:</b>	Company Owned Vehicles, On-site fuel use, Refrigerants, Electricity, heat or steam generated on-site
<b>Scope 2:</b>	District heating, On-site consumption of purchased electricity
<b>Scope 3:</b>	Hire cars, District heating transmission and distribution, Employee-owned car travel (grey fleet), Transmission and Distribution
<b>Exclusions:</b>	Waste, Water, Business travel (rail, flights, taxi), Freight, home-working, employee commuting, purchased goods & services, capital goods, use of sold products & end of life treatment of sold products.

#### 2.1.2 Data management

This is the second year Volex have calculated their own emissions assessment using an online software platform named UL360. An additional staff member has been employed this year to assist with managing data integrity across multiple ESG metrics beyond carbon emissions. Data is input to the system on a monthly basis by site representatives with regional approvers for larger sites.

Alan Taylor and Steven Sun (Asia Sustainability Lead) have overall responsibility for the collation of the data. Representatives at each site have site level logins to submit their own data. Training on use of the platform has been given in house by Alan and Steven. A monthly email notification is sent out to each site representative as a reminder to upload their data.

The system notifies the user if the input data is out of the pre-set parameters which were set by Alan and Steven. Also, Steven and Alan review the data as the first quality check, with the ability for queries, responses, file uploads and final approval within the UL360 system.

### 2.1.3 Data limitations

There were no data limitations found as all primary data required for verification of material emissions was available to download from the UL360 system.

It was noted that files uploaded as evidence by site representatives could be found in up to three separate locations on the UL360 system which may cause evidence to be undiscovered by auditors.



## 2.2 Assessment of GHG data and information

### 2.2.1 On-site consumption of purchased electricity

On-site consumption of purchased electricity accounts for 86.8% of Volex's total GHG emissions. The 5 most energy consuming sites were audited in detail, in order of materiality these were:

- Batam, Indonesia
- Zhongshan, China
- Suzhou, China
- Henggang
- Cayirova, Turkey

These sites collectively represent 83% of 'Grid electricity non-renewable' emissions. The total consumption for each site submitted was correct based on evidence provided from bills covering the 12-month assessment period.

Electricity consumption from 'Grid Electricity Renewable' was applicable only to Basingstoke, UK and Zhongshan, China. A 100% renewable energy tariff certificate was provided as evidence of the renewable energy supplied and confirmed to be correct. All other sites are on a non-renewable tariff.

The emissions factors were sourced from IEA for each country and applied correctly (see 2.3).

### 2.2.2 Transmission and Distribution

Transmission and Distribution accounts for 5.8% of Volex's total GHG emissions.

### 2.2.3 Other emission sources

The following emissions sources were not material to the total and were therefore not audited in detail:

- Hire cars (2.5%),
- On-site fuel use (2.2%),
- District heating (1.1%),
- Refrigerants (0.8%) – Gas figures submitted matched evidence provided for the two sites with fugitive emissions: Batam, Indonesia and Zhongshan, China,
- Company Owned Vehicles (0.7%),
- Employee-owned car travel (grey fleet) (0.1%),
- District heating transmission and distribution (0.1%),

All calculations checks and emission factors checks can be seen section 2.3.

## 2.3 Data calculations

The emission factors used for the calculations have been verified as correct and appropriate for the data (Table 1). The calculations are carried out using the UL360 platform. During the audit, spot checks were carried out on calculations in the MS Excel downloaded spreadsheets (Table 22).

**Table 1: Emissions factors used**

Emissions source	Database	Year	Additional comments
Refrigerants (Perfluorobutane / CF410)	Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report - 100yr GWP (2014)  <a href="http://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml#1">www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml#1</a>   Accessed 12/05 2020	2014	Correct
Refrigerants, On-site consumption of purchased electricity, Transmission and Distribution, Company Owned Vehicles, Hire cars, District heating, Employee-owned car travel (grey fleet), District heating transmission and distribution, Electricity, heat or steam generated on-site	Department for Business, Energy & Industrial Strategy (BEIS) - 2022   <a href="https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2022">https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2022</a>	2022	All correct
On-site consumption of purchased electricity, Transmission and Distribution	Based on IEA data from CO <sub>2</sub> Emissions from Fuel Combustion © OECD/IEA 2022, <a href="http://www.iea.org/statistics">www.iea.org/statistics</a>	2022	Could not be verified during the audit as these are not from a freely available source. However, the source is considered robust and appropriate.
On-site consumption of purchased electricity (US sites), Transmission and Distribution (US sites)	eGRID 2021 Summary Tables   <a href="https://www.epa.gov/egrid/download-data">https://www.epa.gov/egrid/download-data</a>   Released 31/01/23	2021	All correct

**Table 2: Calculation checks**

Emission source name in Volex's calculations	Site	Issue	Recommendation	Comment/action by Volex
On-site Generated emissions	Pune, India	On-site generated emissions from solar power in India should be in scope 1. The kWh produced have been multiplied by the Indian electricity emission factor which is incorrect (electricity is not being purchased from the grid).	Move reporting from on-site solar power generation from scope 2 to scope 1. (For emissions this will be zero but kWh can be reported under scope 1.)	Updated and agreed
Grid electricity - non renewable emissions	Bantam, Suzhou, Zhongshan, Carivaya, Henggang	All calculating correctly based on 2022 factors	None	N/A

### 3 Conformance with verification criteria

The chosen methodology that has been used for accounting and reporting Volex's GHG inventory is the ISO14064-3 standard. Carbon Footprint Ltd has examined Volex's GHG statement in relation to the ISO14064-3 standard. The verification activities have shown that Volex has met the verification criteria satisfactorily.

**Relevance** – the data collected and reported reflects the significant environmental impacts of Volex's operations.

**Completeness** – emission sources that come within the reporting boundary have been quantified and reported where possible. Exclusions (if applicable) have been disclosed and justified.

**Consistency** – methodologies are documented and appear to be consistent.

**Transparency** – the carbon footprint report states the company's approach to data collection and the estimations that were made.

**Accuracy** – sufficient accuracy has been achieved. Actions to improve data accuracy and reduce uncertainty have been identified.

### 4 Conclusions

Volex's boundaries and system has satisfactorily captured the most significant and relevant emission sources.

One minor calculation/scoping error was identified during the audit, however this was corrected during the course of the audit.

Primary data uploaded was available on the platform for the most material emissions sources. It is not a mandatory requirement to upload evidence for data entry apart from energy and water. Therefore, primary data might not be available for spot checking all data submitted. Consider making primary data mandatory going forward for all data entry.

Overall, the calculations were correct, and the estimation methodologies were acceptable.

## 4.1 Recommendations

Below are several recommendations to assist Volex in improving the quality of its GHG statement:

- Move reporting from on-site solar power generation from scope 2 to scope 1.
- Consider including Well-To-Tank to expand the scope of reporting.
- Consider reporting market-based emissions based on supplier-specific electricity tariff emissions for each site. 100% renewable energy tariffs result in zero market-based emissions.

## 4.2 Assurance opinion

Based on the results of our verification process, Carbon Footprint Ltd provides limited assurance of the GHG emissions statement, **and found no evidence that the GHG emissions statement:**

- is not materially correct and is not a fair representation of the GHG emissions data and information;
- has not been prepared in accordance with the ISO14064-3 standard.

It is Carbon Footprint Ltd's opinion that Volex has established appropriate systems for the collection, aggregation and analysis of quantitative data for determination of GHG emissions for the stated period and boundaries.

# Appendix 1

## Volex Verification Plan – Carbon Footprint 2022 (01 April 2022 - 31 March 2023)

01/06/2023

Venue: Online Present: James Fryer, Carbon Footprint Ltd (Verifier) Alan Taylor, Volex

ISO 14064-3 Ref.		ISO 14064-3 Requirements	Evidence	Comments
5.1.3.	Level of Assurance	To be agreed at the beginning	Anecdotal/email communication	Limited
5.1.4	Objectives	To be agreed at the beginning	Anecdotal Proposal Verification report	Annual reporting (required under Streamlined Energy & Carbon Reporting (SECR))
5.1.5	Criteria	To be agreed at the beginning	Anecdotal	ISO14064-3 standard
5.1.6	Scope	Organisational boundaries, physical infrastructure & activities, GHG sources, type of GHGs, time period	Anecdotal UL 360 platform Proposal	1 <sup>st</sup> April 2022 to 31 <sup>st</sup> March 2023 - Financial control Scopes 1: Company Owned Vehicles, On-site fuel use, Refrigerants, Electricity, heat or steam generated on-site Scopes 2: District heating, On-site consumption of purchased electricity Scopes 3: Hire cars, District heating transmission and distribution, Employee-owned car travel (grey fleet), Transmission and Distribution
5.1.7	Materiality	Establish materiality		Materiality threshold 5%
5.4.4	Verification records	The verifier shall maintain records to demonstrate	Verification plan. Verification report.	This verification plan is the basis of recording the audit and capturing information.



ISO 14064-3 Ref.	ISO 14064-3 Requirements	Evidence	Comments
		conformity to the requirements of ISO14064-3.	
6.1.3.3	GHG information system & its controls	Processes for collecting, processing and reporting GHG information.	Anecdotal
6.1.3.4	GHG data & information	Examination of the GHG data and information.	UL 360 platform
6.1.5	Verification Plan	Document assurance level, objectives, criteria, scope, materiality & schedule.	This document This table documents the verification plan.
6.1.6	Evidence gathering plan		Sampling Plan See Appendix 2.
6.3.1	Evaluation of the GHG statement	Evaluate whether the evidence collected supports the GHG statement.	Verification report Sufficient evidence was provided to support the statement.
6.3.1.4	Assessment against verification criteria	Confirm whether the organisation conforms to the verification criteria.	Verification report Organisation has met the verification criteria satisfactorily.
6.3.2 & 6.3.3	Conclusion and opinion	A verification statement containing the level of assurance, objectives, scope, criteria, the GHG statement and the verifier’s opinion on the GHG statement.	Verification statement A verification statement will be issued.

## Appendix 2 – Sampling Plan

The sampling will be a risk-based approach in order to collect adequate evidence to support the limited level of assurance. Calculations and results will be reviewed and discussed as a desk-based exercise and during the remote audit.

Sites and data sampled were chosen due to materiality to the total carbon footprint, noticeable deviation from the previous year's results, and potential anomalies identified from initial analysis.

Primary data (e.g. utility bills, expense claims, fuel card reports etc.) requested is shown in the following table:

Emissions source	Requested	Provided
Electricity	Batam, Indonesia	Utility bills provided
Electricity	Zhongshan	Utility bills provided
Electricity	Suzhou, China	Utility bills provided
Electricity	Henggang, China	Utility bills provided
Electricity	Cayirova, Turkey	Utility bills provided
Refrigerants	Batam, Indonesia	Evidence provided for HCFC-22/R22
Refrigerants	Zhongshan, China	Evidence provided for HCFC-22/R22

Secondary data was reviewed for other sites and emission sources.



# Appendix 3

## Carbon Footprint Ltd Verification Team

Carbon footprint Ltd has enabled the completion of the carbon footprints of over 20,000 businesses globally via our tools and consultancy. We are confident that we bring independent, ethical conduct, fair representation, due professional care and fresh insights to carbon management and verification activities.

We work with a vast range of companies, from SMEs to multinational blue-chip corporations with goals to comply with legislation, cut the cost of carbon in their business, maximise sales by developing true sustainable credentials and prepare for future legislation.

We are a world leading carbon footprinting company:

- We follow international standards, such as ISO14064-1, PAS2050, GHG Protocol, ISO14064-3 within our work
- We are ISO 14001:2015 and ISO 9001:2015 certified
- We are approved under the Quality Assurance Standard (QAS) – this means that our own carbon footprinting tools and methodology is independently audited by AEA-Ricardo.
- We work with other businesses to complete/validate GHG emissions for their Mandatory GHG Reporting and CDP reporting requirements
- We run the Carbon Academy (for peer group learning)
- We provide input and advice to the government on low carbon legislation

### **James Fryer**

#### **Environmental Consultant**

James is an environmental consultant at Carbon Footprint Ltd, holding a BSc in Physical Geography and an MSc in Integrated Environmental Studies. He has carried out many carbon footprint assessments to ISO 14064-1 and verifications to ISO14064-3. James is particularly interested in the role of sustainable finance in driving solutions to climate change as well as using natural climate solutions to protect and regenerate ecosystems.

### **Jenny Webb**

#### **Senior Environmental Consultant**

Jenny is a senior environmental consultant at Carbon Footprint Ltd and has a Bachelor's degree in Environmental Science. She has completed numerous carbon footprint assessments to ISO14064-1 and the GHG Protocol standard.

### **Dr. Wendy Buckley**

#### **Client Director / Co-Founder Carbon Footprint Ltd**

Wendy has a B.Sc. & Ph.D. in Physics and is also a Member of the Chartered Institute of Marketing with MCIM status. She has held various appointments across the globe in both the public and private sector. She has developed extensive knowledge in manufacturing, thermodynamic processes and low energy solutions. Wendy has won a number of business awards and is Chair Person of the Sustainable Business Network in North Hampshire.