# Liquid Intelligent Technologies UK Carbon Footprint

## FY2023

16 June 2023

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## 1. Introduction

This report presents the Liquid Intelligent Technologies' (Liquid) greenhouse gas (GHG) inventory for the financial year 2023 (FY23), specifically for the operations in the United Kingdom. Liquid's 2023 financial year ran from 1 March 2022 to 28 February 2023.

The inventory encompasses the direct and indirect emissions generated by Liquid UK's operations. The purpose of this assessment report is to compile a GHG emissions inventory for Liquid Intelligent Technologies UK, specifically for corporate reporting purposes. The intended audience of this report includes company executives and shareholders, and other interested or affected parties that request this information.

## 2. Approach and Methodology

The UK GHG inventory for FY23 was undertaken and compiled in accordance with the following standards:

- The Greenhouse Gas Protocol Corporate Standard (GHG Protocol) as developed by the World Business Council for Sustainable Development and the World Resources Institute.

- The ISO 14064-1, 2nd edition. The ISO standard for measuring and reporting GHG emissions, ISO 14064-1:2006, was revised by the ISO in 2018 and a new edition, ISO 14064-1:2018, was released. A comparison between the old standard, ISO 14064-1:2006, which is in alignment with the GHG Protocol standard, and the new ISO 14064-1:2018 categories is presented in Appendix 2: Comparison between the old ISO14064-1:2006 and new ISO 14064-1:2018 Standard.

By using these internationally recognised standards in a complementary way, the GHG inventory's environmental integrity is enhanced, corporate risk management is supported, and the development of a GHG management strategy is facilitated. The GHG protocol principles for the accounting of this GHG inventory are detailed in Table 1.

**Table 1: Principles for GHG accounting and reporting.**

| Principle | Description |
|---|---|
| **Relevance** | Ensure the GHG inventory appropriately reflects the GHG emissions of Liquid Intelligent Technologies UK and serves the decision-making needs of both internal and external stakeholders. |
| **Completeness** | The GHG inventory accounts for all significant GHG emission sources within Liquid Intelligent Technologies UK's chosen inventory boundary. |
| **Consistency** | Utilize consistent methodologies to enable meaningful comparisons of emissions over time within Liquid Intelligent Technologies UK. |
| **Transparency** | Address all relevant issues in a factual and coherent manner, based on a clear audit trail specific to Liquid Intelligent Technologies UK. Disclose any relevant assumptions and provide appropriate references to the accounting and calculation methodologies as well as data sources used. |

| Principle | Description |
|---|---|
| **Accuracy** | Ensure that the quantification of GHG emissions for Liquid Intelligent Technologies UK is systematically neither overestimated nor underestimated to the best of our judgment, while reducing uncertainties as far as practicable. |

The first step in the quantification of a GHG inventory is the selection of reporting boundaries. These boundaries are important as they identify the GHG sources (activities that emit GHGs) that are to be included in the inventory calculation. Two types of GHG inventory boundaries need to be set – an organisational boundary and an operational boundary.

## *2.1. Organisational Boundary*

The organisational boundary refers to a grouping of activities or facilities over which an organisation exercises operational or financial control. It determines which facilities or operations are included in the organisation's GHG inventory for reporting purposes. Two approaches can be used to set the organisational boundary: the control approach and the equity share approach.

Under the control approach, a company accounts for 100% of the GHG emissions from facilities or operations that it has direct control over. This approach considers both financial control and operational control. Financial control is established when a company has the authority to direct the financial and operating policies of an operation, allowing them to gain economic benefits from it. Operational control, on the other hand, is determined by the company's full authority to introduce and implement operating policies at an operation.

The equity share approach, in contrast, considers a company's GHG emissions based on its share of equity in an operation. In this approach, the company accounts for its proportionate emissions based on its ownership stake in the operation.

By establishing the organisational boundary, organisations can accurately determine which facilities or operations to include in their GHG inventory. This ensures the comprehensive reporting of emissions for the purposes of measuring and managing the organisation's carbon footprint and implementing effective emission reduction strategies.

Liquid has adopted an *operational control approach* for determining the organisational boundary for their GHG reporting. This means that Liquid accounts for GHG emissions from all facilities over which they have full authority to introduce and implement operating policies. However, for the purpose of this report, the focus is solely on the emissions from Liquid UK's operations. Therefore, the emissions reported in this document pertain specifically to Liquid's activities and operations within the United Kingdom. It is important to note that while this report provides insights into the UK operation's emissions, it represents a subset of Liquid's overall GHG inventory.

## 2.2. Data and Emission Sources

The inputs, resources, and activities associated with running Liquid UK's operations have emission-related impacts. It is crucial to identify the relevant activity data sets to calculate the company's carbon footprint for the FY23.

The activity data sets used for the carbon footprint calculations were provided by Liquid and have been included in the GHG inventory calculations for FY23. While no verification or assurance of the data sources or results has been conducted by a third party, efforts have been made to ensure data accuracy and integrity. The following data sets were considered in the carbon footprint calculations:

- Indirect GHG emissions from purchased electricity consumed by Liquid UK facilities.
- Indirect emissions associated with business travel and employee commuting of the UK operation's employees.
- Emissions from business travel, including flights, train journeys, and accommodation of the UK operations' employees.
- Indirect emissions from the treatment and disposal of waste generated by within the UK operations.
- Indirect emissions associated with water consumption, considering the energy required for water treatment and distribution within the UK operations.
- Emissions from other ancillary activities or operations identified as significant contributors to Liquid UK's carbon footprint.

## 2.3. Significance Criteria

The data sets provided by Liquid and the resulting emissions were assessed in terms of their significance, considering the impact on Liquid UK's carbon footprint. The significance assessment, outlined in Table 2, ensures that the carbon footprint boundary includes emission sources that are considered significant. The outcomes of the significance assessment are contained in Table 3. This boundary setting becomes crucial for setting emission reduction targets, which Liquid may consider in the future.

Companies are responsible for establishing their own criteria to determine the significance of their indirect emissions, taking into consideration the purpose of the GHG inventory. ISO 14064-1:2018 does however provide guidance for companies to establish their significance criteria for determining the significant emission sources within their indirect emissions. In accordance with the ISO 14064-1:2018 standard, Liquid has employed a significance assessment to identify the most material sources of emissions in its carbon footprint. This assessment serves as a guideline for future carbon footprint reporting by Liquid, ensuring that the identified emissions are appropriately addressed.

The criteria used to determine the significant emissions sources include:

- **Magnitude**: These indirect emissions sources have a quantitatively substantial impact. This criterion focuses on emissions sources that contribute significantly to Liquid's overall carbon footprint.
- **Level of influence**: Evaluates the extent to which Liquid can monitor and reduce emissions associated with specific activities. This criterion considers factors such as energy efficiency measures, eco-design practices, customer engagement initiatives, and terms of reference that enable Liquid to exert control over emissions.
- **Risk or opportunity:** Indirect emissions that expose Liquid to climate-related risks and opportunities. This criterion considers factors such as financial, regulatory, supply chain, product and customer risks, as well as opportunities for new markets or business models.
- **Sector-specific guidance**: Liquid considers sector-specific guidance that identifies significant GHG emissions within their industry. This criterion ensures alignment with industry norms and best practices when selecting significant emissions.
- **Outsourcing:** Consider indirect emissions resulting from outsourced activities that are typically core business activities. This criterion recognises the emissions associated with outsourced operations and includes them in the assessment of significant emissions.
- **Employee engagement**: Evaluate indirect emissions that have the potential to motivate employees to reduce energy use and foster a collective commitment to addressing climate change. This criterion includes initiatives such as energy conservation incentives and carpooling programs.

By employing these significance criteria, Liquid ensures a comprehensive evaluation of its indirect emissions, focusing on emission sources that have the most significant impact on its carbon footprint. This approach enables Liquid to prioritise its reporting and mitigation efforts, align with industry standards, and engage stakeholders effectively.

The table below outlines the framework used to assess the significance of emissions sources and determine the inclusions in Liquid UK's GHG inventory based on recommended thresholds.

**Table 2: Significance criteria and thresholds for inclusion**

| Significance criteria | Definition |
|---|---|
| **1. Magnitude** | **Significant if** emissions account for 1% or more of Liquid UK's total carbon footprint are considered quantitatively substantial and significant. |
| **2. Level of influence** | **Significant if** Liquid UK has direct control of emission sources and can implement measures to monitor and reduce the emissions associated with these activities. |
| **3. Risk and opportunity** | **Significant if** indirect emissions contribute to Liquid UK's exposure to significant climate-related risks or opportunities. This could include emissions associated with activities that contribute to at least one of the following: increase in regulatory risk, increase in supply chain risk, or expansion into a new market opportunity. |

| Significance criteria | Definition |
|---|---|
| **4. Sector-specific guidance** | **Significant if** there are sector-specific guidance, benchmarks or targets for indirect emissions that are relevant to Liquid UK. |
| **5. Outsourcing** | **Significant if** indirect emissions result from outsourced activities that are core business activities. For example, transportation of products by third-party logistics providers. |
| **6. Employee engagement** | **Significant if** employees' activities (e.g. travel/commuting) result in a significant contribution to Liquid UK's indirect emissions. |

The emission sources which have been included in Liquid UK's GHG inventory are detailed in Table 3. Further details on the significance assessment are contained in Appendix 3: Significance Assessment.

In accordance with the corporate GHG standards, the emissions from Liquid UK's operations are categorised as either direct or indirect emission sources. The reporting of direct emissions, also known as Scope 1 emissions, as well as energy indirect emissions, known as Scope 2 emissions, are mandatory to report according to the GHG protocol and the ISO 14064-1 standards. However, the reporting of other indirect emissions, referred to as Scope 3 emissions, is considered voluntary in the GHG Protocol and is at the discretion of the company of whether to report on these emissions. The ISO 14064-1:2018 does provide guidance in the form of significance criteria which should be used to determine what indirect emissions sources should be included in the GHG inventory.

The emission sources included in the boundary of this assessment are presented below, categorised according to the respective categories used by both the ISO 14064-1:2006 standard and the ISO 14064-1:2018 standard. These categories align with the different scopes referenced in the ISO 14064-1:2006 standard. These emission sources have been carefully evaluated for their significance and inclusion within Liquid UK's carbon footprint boundary. The assessment ensures transparency, accuracy, and comparability in reporting, allowing for future reference and the establishment of emissions reduction targets.

As Liquid continues to develop and mature its carbon footprint calculations, the emission sources and their boundary may evolve. The identification and justification of emission sources are essential components of the formal emissions target setting procedure, providing a solid foundation for Liquid's sustainability efforts.

**Table 3: Emissions categories and sources in Liquid UK's FY23 GHG inventory**

| ISO 14064:2018 | | ISO 14064:2006 | | Emission Sources | Inclusion in GHG Inventory |
|---|---|---|---|---|---|
| **Category** | **Description** | **Category** | **Description** | | |
| 1 | Direct GHG emissions and removals | Scope 1 | Energy direct emissions | Emissions that occur from sources that are controlled or owned by Liquid UK such as:<br>• Stationary Diesel Combustion<br>• Mobile Diesel Combustion | **Included:** as required by SANS 14064-1:2021 and ISO 14064-1:2006. However, Liquid UK does not have any direct emissions sources. |
| 2 | Indirect GHG emissions from imported energy | Scope 2 | Energy indirect emissions | Emissions associated with the purchasing of electricity. | **Included based on significance assessment**: Indirect GHG emissions from electricity use are significant due to the **magnitude** in Liquid UK's emissions. |
| | | Scope 3, category 3 | Fuel- And Energy-Related Activities | Emissions related to the production of fuels and energy purchased and consumed by Liquid UK in the reporting year such as:<br>• Upstream emissions of purchased fuels<br>• Upstream emissions of purchased electricity<br>• Transmission and Distribution losses | **Included based on significance assessment**: Indirect GHG emissions from fuel- and energy-related activities are significant due to the **magnitude** of the emissions. |
| 3 | Indirect GHG emissions from transportation | Scope 3, category 4 | Upstream Transportation and Distribution | Emissions from the transportation and distribution activities throughout the value chain: | **Excluded as no upstream transport and distribution has been reported by** |

| ISO 14064:2018 | | ISO 14064:2006 | | Emission Sources | Inclusion in GHG Inventory |
|---|---|---|---|---|---|
| **Category** | **Description** | **Category** | **Description** | | |
| | | | | • Water transport<br>• Road transport<br>• Air transport | **Liquid UK.** |
| | | Scope 3, category 6 | Business Travel | Emissions from business travel such as:<br>• Air travel<br>• Rail travel<br>• Bus travel<br>• Automobile travel (e.g., business travel in rental cars or employee-owned vehicles other than employee commuting to and from work)<br>• Accommodation<br>• Travel claims | **Included based on significance assessment:** Emissions related to business travel are significant due to Liquid UK having the ability to **influence** the methods of corporate logistics and business travel, as well as the **magnitude** of the emissions associated with their business travel activities. |
| | | Scope 3, category 7 | Employee Commuting | Emissions from employee commuting such as:<br>• Automobile travel<br>• Bus travel<br>• Rail travel<br>• Air travel<br>• Other modes of transportation (e.g., subway, bicycling, walking) | **Included based on significance assessment:** Emissions related to employee commuting are significant due the **magnitude** of the emissions as well as Liquid UK having the **opportunity** to engage employees to reduce their emissions resulting from commuting. |
| | | Scope 3, category 9 | Downstream Transportation | Emissions from downstream transportation and distribution from | **Not applicable as no downstream transport and** |

| ISO 14064:2018 | | ISO 14064:2006 | | Emission Sources | Inclusion in GHG Inventory |
|---|---|---|---|---|---|
| **Category** | **Description** | **Category** | **Description** | | |
| | | | and Distribution | transportation/storage of sold products in vehicles/facilities not owned by Liquid UK, such as:<br>• Air transport<br>• Road transport | **distribution was reported in Liquid UK's GHG emissions.** |
| 4 | Indirect GHG emissions from products used by organisation | Scope 3, category 1 | Purchased Goods and Services | Products include both goods (tangible products) and services (intangible products) such as:<br>• Water<br>• Stationary<br>• Office equipment | **Included based on significance assessment:** Indirect GHG emissions relating to goods used by Liquid UK are significant due to the level of **influence** Liquid UK has over the type of goods that can be purchased. |
| | | Scope 3, category 2 | Capital Goods | Emissions from the use of capital goods by the company, such as:<br>• Equipment<br>• Machinery<br>• Buildings<br>• Vehicles | **Not applicable as no capital goods were reported in Liquid UK's GHG emissions.** |
| 5 | Indirect GHG emissions associated with the use of products from the organisation | Scope 3, category 10 | Processing of Sold Products | Emissions from processing of sold intermediate products by third parties (e.g., manufacturers) subsequent to sale by the company | **Not applicable as Liquid UK is a service provider and therefore product emissions are not reported in Liquid UK's GHG emissions.** |
| | | Scope 3, category 11 | Use of Sold Products | Emissions from the use of goods and services sold by the company in the reporting year. | |
| | | Scope 3, category 12 | End-Of-Life | Emissions from the waste disposal | |

| ISO 14064:2018 | | ISO 14064:2006 | | Emission Sources | Inclusion in GHG Inventory |
|---|---|---|---|---|---|
| **Category** | **Description** | **Category** | **Description** | | |
| | | | Treatment of Sold Products | and treatment of products sold by the reporting company such as:<br>• Landfilling<br>• Incineration<br>• Recycling | |
| 6 | Indirect GHG emissions from other sources | Scope 3, category 5 | Waste Generated in Operations | Waste treatment activities may include:<br>• Disposal in a landfill<br>• Recovery for recycling<br>• Incineration<br>• Composting (Food Waste) | **Included based on significance assessment:** Indirect GHG emissions from waste generation are significant due to the level of **influence** Liquid UK has over how much waste is generated. However, as complete waste data is not readily available or the processes are not yet put in place to fully quantify the waste generated, only paper waste is included for this reporting year. |
| | | Scope 3, category 8 | Upstream Leased Assets | Operation of assets that are leased by the reporting company in the reporting year such as:<br>• Vehicles<br>• Equipment<br>• Generator | **Not applicable as no leased assets were reported in Liquid UK's GHG emissions.** |
| | | Scope 3, category 13 | Downstream Leased Assets | Assets that are owned by the reporting company (acting as lessor) and leased to other entities | |

| ISO 14064:2018 | | ISO 14064:2006 | | Emission Sources | Inclusion in GHG Inventory |
|---|---|---|---|---|---|
| **Category** | **Description** | **Category** | **Description** | | |
| | | | | in the reporting year such as:<br>• Vehicles<br>• Equipment<br>• Generator | |
| | | Scope 3, category 14 | Franchises | Emissions from the operation of franchises not included in scope 1 or scope 2. | **Not applicable as Liquid does not utilise a franchise model.** |
| | | Scope 3, category 15 | Investments | Emissions associated with the reporting company's investments in the reporting year such as:<br>• Equity investments<br>• Debt investments<br>• Project finance<br>• Managed investments and client services. | **Not applicable as no investment activities were reported in this boundary of Liquid UK's GHG emissions.** |

## 2.4. Calculation Methodology

The methodology used to calculate the GHG inventory entails multiplying the GHG activity data by an appropriate emission factor.

**Activity dat x Emission factor = Quantity of GHG Emissions**

The total GHG emissions produced by Liquid UK annually are determined by adding up the GHG emissions quantities calculated for each activity data source using the above equation.

## 2.5. Assumptions, Emission factors and Conversion Factors

The calculations of Liquid UK's FY23 GHG inventory rely on a range of assumptions, emission factors, and conversion factors, which have been carefully selected and applied to ensure accuracy and reliability. These factors are provided in the accompanying Excel spreadsheet and are also available in Appendix 1: Assumptions and Emission /Conversion Factors of this report.

The selection of these factors follows the guidance provided by ISO 14064-1:2018, ensuring that they meet the necessary criteria for robust emissions quantification. The factors employed in the calculation process should satisfy the following requirements:

- ***Recognised Source***: All factors used originate from reputable and recognised sources within the field of greenhouse gas accounting and reporting.
- ***Appropriate for GHG Sources***: Each factor is specifically chosen to be appropriate for the greenhouse gas source being assessed. This ensures that the calculations accurately reflect the emissions associated with each activity.
- ***Up to date***: The selected factors are up to date as of the time of quantification, considering the most recent available data and scientific knowledge. This ensures that the inventory calculations capture the current understanding of emissions and reflect the latest information.
- ***Consideration of Uncertainty***: The chosen factors consider the quantification uncertainty associated with each emission source. They are calculated with methodologies that provide accurate and reproducible results, minimising uncertainties and ensuring the reliability of the inventory.
- ***Alignment with Intended Use***: The factors align with the intended use of the GHG inventory, which is to provide a comprehensive and accurate representation of Liquid UK's emissions. They are specifically chosen to suit the purpose of the inventory and facilitate effective decision-making based on the results.

By adhering to these criteria, Liquid UK ensures that the calculations of its GHG inventory are based on reliable and relevant information. The transparent inclusion of these assumptions, emission factors, and conversion factors allows for traceability and facilitates the understanding and verification of the reported emissions.

During the calculation of Liquid UK's GHG inventory for FY23, several key assumptions were made to ensure the completeness and accuracy of the emissions assessment. The following assumptions were taken into consideration:

- ***Electricity Consumption***: In cases where electricity consumption data was not provided directly, the payment amount for each location was utilised along with known electricity consumptions to calculate an intensity factor. This intensity factor was then used to estimate the missing electricity consumption data for accurate inventory calculations.
- ***Purchased Goods***: The emissions associated with purchased goods, specifically purchased computers, were determined by using a large computer manufacturer's total Scope 1 and Scope 2 emissions divided by their total revenue. This calculation provided an emission factor based on costs that was applied to the purchased computers to estimate their emissions contribution.
- ***Business Travel Distances***: For unknown business travel distances, approximations were made using Google Maps. These estimations allowed for the calculation of emissions based on the distance travelled for business purposes.
- ***Employee Travel Claims***: The emissions associated with employee travel claims were approximated by utilising the company's reimbursement rates provided. By using these rates, the kilometres travelled for business purposes were calculated and multiplied by the relevant DEFRA emissions factors, enabling the estimation of emissions associated with employee travel.
- ***Employee Commuting***: Emission factors for mixed employee commuting were derived by averaging the known emission sources associated with various commuting methods. This provided a representative average emission factor that was applied to estimate emissions for employees with unknown commuting details.
- ***Extrapolation of Employee Commuting Data***: To account for employees who did not complete the survey or provide commuting data, the available employee commuting data was extrapolated based on the known data. This allowed for a more comprehensive estimation of emissions associated with employee commuting.
- ***Water Consumption:*** Water consumption was calculated based on the average office use per person, which was then multiplied by the operation's employee headcount. This approach provided an estimation of water consumption associated with Liquid UK's facilities.

These assumptions were made to ensure a reasonable estimation of GHG emissions in cases where direct data was unavailable or incomplete. It is important to note that these assumptions were based on available information and industry best practices. As more accurate or specific data becomes available, these assumptions can be refined in future reporting cycles to further enhance the accuracy and reliability of Liquid UK's GHG inventory calculations.

The calculation of GHG emissions for Liquid UK's carbon footprint relied on the use of reliable and up-to-date emission factors obtained from various trusted sources. The UK Department

of Environment Food and Rural Affairs (DEFRA[1]) played a significant role as a primary source for emission factors related to Liquid UK's activities. DEFRA's emission factors are widely recognised and accepted within the industry, ensuring the reliability and relevance of the data for the UK context.

## 3. Results for Corporate Reporting

This section provides an overview of the FY23 GHG inventory for Liquid UK, intended for corporate reporting purposes. The inventory has been prepared following the reporting formats outlined in both the ISO 14064-1:2006 standard and the recently updated ISO 14064-1:2018 standard. The inventory reported under the GHG Protocol and the ISO 14064-1:2006 standard is reported in the following section. The inventory reported under the ISO 14064-1:2018 standard can be found in Appendix 4: ISO 14064-1:2018 Standard Reporting.

### *3.1. Results as per GHG Protocol and ISO14064-1:2006*

Table 4 presents a summary of the GHG inventory for Liquid UK's FY23, following the reporting structure outlined by the GHG Protocol and the ISO14064-1:2006 standard. The inventory covers both energy indirect emissions (Scope 2) and other indirect emissions (Scope 3). Liquid UK does not have any direct emissions (Scope 1) due to the absence of combustion sources under its operational control or company-owned vehicles.

**Table 4: FY23 GHG inventory according to the GHG Protocol and ISO14064-1:2006**

| Scope | Description | FY23 Emissions |
|---|---|---|
| SCOPE 1 | Stationary and Mobile Combustion Sources | 0 $tCO_2e$ |
| **Total SCOPE 1** | | **0 $tCO_2e$** |
| SCOPE 2 | Purchased Electricity | 80.03 $tCO_2e$ |
| **Total SCOPE 2** | | **80.03 $tCO_2e$** |
| SCOPE 3 | Purchased Goods and Services | 0.25 $tCO_2e$ |
| | Fuel- and Energy-related Activities | 7.32 $tCO_2e$ |
| | Waste Generated in Operations | 0.004 $tCO_2e$ |
| | Business Travel | 1 201.33 $tCO_2e$ |
| | Employee Commuting | 37.07 $tCO_2e$ |
| **SCOPE 3 Sub-Total** | | **1 245.98 $tCO_2e$** |
| **Total Emissions** | | **1 326.02 $tCO_2e$** |

In FY23, Liquid UK's energy indirect emissions accounted for 80.03 $tCO_2e$, reflecting the carbon impact of the purchased electricity used in Liquid UK's operations. Additionally, Liquid

[1] The UK Department of Environment Food and Rural Affairs. Greenhouse gas reporting: conversion factors 2022 - GOV.UK (www.gov.uk)

UK reported on their other indirect emissions (Scope 3), demonstrating a commitment to comprehensive carbon accounting. The calculated Scope 3 emissions for FY23 totalled 1 245.98 $tCO_2e$, encompassing diverse sources such as purchasing of goods, business travel, and employee commuting. By including these emissions, Liquid UK actively extends its environmental transparency beyond direct operational control, recognising the broader impact of its activities.

It is important to note that the emissions attributed to general waste could not be included in this reporting year due to the implementation of monitoring measures commencing from this year onward. Liquid UK has taken steps to enhance waste management practices and implement monitoring measures to capture data from all types of waste generated by its operations. While general waste emissions were not included in the current report, the company is committed to monitoring and reporting on these emissions in future reporting periods. However, it is worth mentioning that the emissions associated with recycling of paper documents have been captured and reported for FY23. The recycling of paper documents resulted in emissions of approximately 4 $kgCO_2e$ for the reporting year.

## 4. Conclusion and Recommendations

In this section of the FY23 carbon footprint report for Liquid UK, valuable insights into the organisation's greenhouse gas emissions are provided. The data collected and analysed in accordance with the ISO 14064-1:2006 and ISO 14064-1:2018 standard highlights the significant sources of emissions, offering valuable insights for future carbon footprint reporting and management strategies. These findings emphasize the need for targeted efforts to reduce emissions in these areas.

### *4.1. Conclusion*

The total emissions for Liquid UK's FY23 carbon footprint are summarised in Table 5, following the ISO 14064-1:2006 and GHG Protocol standards.

**Table 5: Summary of FY23 results according to ISO14064-1:2006 and GHG Protocol**

| GHG Inventory according to ISO14064-1:2006 and GHG Protocol | FY23 Emissions |
|---|---|
| Scope 1: Direct GHG emissions and removals | 0 $tCO_2e$ |
| Scope 2: Indirect GHG emissions from imported energy | 80.03 $tCO_2e$ |
| Scope 3: Other indirect emissions that occur in the value chain | 1 245.98 $tCO_2e$ |
| **Total emissions** | **1 326.02 $tCO_2e$** |

The carbon footprint for FY23 amounts to 1 326.02 $tCO_2e$. The largest contributor is Scope 3 indirect emissions, specifically from business travel activities, accounting for 1 245.98 $tCO_2e$. Scope 1 direct emissions, did not contribute to Liquid UK’s emissions as they do not have any direct sources of emissions. Scope 2 energy indirect emissions amount to 80.03 $tCO_2e$, which represents the emissions associated with the purchasing of electricity.

In conclusion, Liquid UK's carbon footprint for FY23 reveals important insights into the organisation's emissions sources. Identifying the major emission sources highlighted in this

report can serve as a foundation for informed decision-making, setting emission reduction targets, and developing sustainability strategies. By addressing transportation-related emissions and expanding monitoring efforts to include all waste streams, Liquid UK can continue its journey towards a more sustainable and environmentally responsible future. The total emissions of 1 326.02 $tCO_2e$ underscore the need for ongoing mitigation measures and the implementation of sustainable practices across various categories.

## *4.2. Recommendations*

The following recommendations are discussed under two categories, namely emission reduction opportunities and suggestions for improving the quantification of Liquid UK's carbon footprint data to achieve more accurate emissions data.

**Emission reduction opportunities:**

To reduce emissions calculated in the FY23 inventory, it is recommended that Liquid UK considers measures to:

- ***Waste Management and Recycling:*** Although general waste monitoring was not in place for the reporting year, Liquid UK should continue implementing measures to monitor and manage all waste streams in the future. This can involve setting up recycling programs for various waste materials and promoting waste reduction initiatives. By prioritising waste reduction and recycling, the company can reduce its emissions and environmental impact.
- ***Encourage sustainable transportation***: Indirect GHG emissions from transportation is a significant source of emissions. Liquid UK could encourage employees to use alternative transport methods such as cycling, carpooling, or walking to work, or consider working from home opportunities and implement policies that incentivise low-emission modes of transportation.
- ***Business Travel Optimisation***: Encourage the use of virtual meetings and remote collaboration tools to reduce the need for extensive business travel. Implementing a clear travel policy that highlights the preference for video conferencing over air travel can be beneficial. This policy might emphasise the importance of making travel decisions based on clear justifications and the necessity of the trip. By requiring employees to provide a clear reason for travel, such as client meetings, essential site visits, or in-person training sessions, unnecessary travel can be minimised.
- ***Set emissions reduction targets:*** Setting targets to reduce emissions can provide Liquid UK with a roadmap to achieve its sustainability goals. Targets should be ambitious but realistic and should cover all scopes of emissions. Regular monitoring and reporting of progress against these targets can also help drive continued improvement.
- ***Continuous Monitoring and Reporting:*** Establish a system for regular monitoring and reporting of emissions to track progress and identify areas for improvement. Set emissions reduction targets and regularly assess and communicate the company's performance to stakeholders.

## Recommendations for future Liquid UK carbon footprint quantification:

We continue to encourage Liquid UK to:

- Align future carbon footprints to the ISO 14064-1:2018 standard:
  - The significance criteria will need to be applied to each emission source recorded in the footprint boundary.
  - Periodically reassess the significance of emission sources, against the criteria in the ISO 14064-1:2018 standard

- Enhanced Data Collection:
  - Strengthen data collection processes to ensure comprehensive and accurate data on emissions sources. This can involve implementing automated systems for data collection, integrating emission tracking tools into operational processes, and establishing clear guidelines for data reporting from various departments.

- Scope 3 Emissions Assessment:
  - Expand the scope of emissions assessment to include a more detailed analysis of Scope 3 emissions.
  - Collaborate with suppliers and partners to collect data on upstream and downstream emissions associated with the company's value chain. This will provide a more complete picture of the company's carbon footprint and identify opportunities for emission reductions.

- Regular Carbon Footprint Assessments:
  - Conduct carbon footprint assessments on a regular basis, such as quarterly or biennially, to track progress and identify trends over time. This will enable Liquid UK to monitor the effectiveness of emission reduction initiatives, set targets, and adjust strategies accordingly.
  - Regularly review and update the inventory to include new emission sources that may arise from changes in operations, product lines, or business expansion.

- Independent Verification:
  - Engage a third-party auditor or verification body to independently review and verify the company's carbon footprint calculations and reporting. This will enhance the credibility and reliability of the reported emissions data and demonstrate transparency to stakeholders.

- Stakeholder Engagement:
  - Engage with stakeholders, including customers, suppliers, and investors, to understand their expectations and incorporate their input into the carbon footprint quantification process. This will help identify additional areas of focus, foster collaboration, and enhance the credibility of the company's sustainability efforts.

## Appendix 1: Assumptions and Emission /Conversion Factors

| Item | Value | Unit | Source | Notes |
|---|---|---|---|---|
| SCOPE 1 - EMISSION FACTORS | | | | |
| | | | | |
| SCOPE 2 - EMISSION FACTORS | | | | |
| UK Grid Emission Factor | 0.19 | $tCO_2e/MWh$ | DEFRA 2022 - 'UK Electricity' tab | |
| SCOPE 3 - EMISSION FACTORS | | | | |
| 3.1 PURCHASED GOODS AND SERVICES | | | | |
| Water Consumption | 0.149 | $kgCO_2e/m^3$ | DEFRA 2022 - 'Water supply' tab | |
| Laptops Purchased Emissions Intensity Factor | 0.0000025 | $tCO_2e/GBP$ | Calculated by Promethium | This value was calculated using the revenue and total scope 1 + 2 emissions from a major computer manufacturer |
| 3.3 FUEL- AND ENERGY-RELATED ACTIVITIES | | | | |
| Electricity Transmission & Distribution Losses | 0.02 | $tCO_2e/MWh$ | DEFRA 2022 - 'Transmission and distribution' tab | |
| 3.5. WASTE GENERATED IN OPERATIONS | | | | |
| Recycled Mixed Paper | 0.02128 | $tCO_2e/tonne$ | DEFRA 2022 – 'Waste Disposal' tab | |
| 3.6 BUSINESS TRAVEL | | | | |
| Flights - Domestic UK | 0.24587 | $kgCO_2e/passenger.km$ | DEFRA 2022 – 'Business Travel – Air' tab | Emission factors used include a radiative forcing uplift. |
| Flights - Economy to/from UK (Short haul) | 0.15102 | $kgCO_2e/passenger.km$ | DEFRA 2022 – 'Business Travel – Air' tab | Emission factors used include a radiative forcing uplift. |
| Flights - Business to/from UK (Short haul) | 0.22652 | $kgCO_2e/passenger.km$ | DEFRA 2022 – 'Business Travel – Air' tab | Emission factors used include a radiative forcing uplift. |
| Flights - Economy to/from UK (Long haul) | 0.14787 | $kgCO_2e/passenger.km$ | DEFRA 2022 – 'Business Travel – Air' tab | Emission factors used include a radiative forcing uplift. |
| Flights - Premium Economy to/from UK (Long haul) | 0.23659 | $kgCO_2e/passenger.km$ | DEFRA 2022 – 'Business Travel – Air' tab | Emission factors used include a radiative forcing uplift. |
| Flights - Business to/from UK (Long haul) | 0.42882 | $kgCO_2e/passenger.km$ | DEFRA 2022 – 'Business Travel – Air' tab | Emission factors used include a radiative forcing uplift. |
| Flights - First to/from UK (Long haul) | 0.59147 | $kgCO_2e/passenger.km$ | DEFRA 2022 – 'Business Travel – Air' tab | Emission factors used include a radiative forcing uplift. |
| Flights - Economy to/from non-UK | 0.14063 | $kgCO_2e/passenger.km$ | DEFRA 2022 – 'Business Travel – Air' tab | Emission factors used include a radiative forcing uplift. |
| Flights - Premium Economy to/from non-UK | 0.22500 | $kgCO_2e/passenger.km$ | DEFRA 2022 – 'Business Travel – Air' tab | Emission factors used include a radiative forcing uplift. |
| Flights - Business to/from non-UK | 0.40781 | $kgCO_2e/passenger.km$ | DEFRA 2022 – 'Business Travel – Air' tab | Emission factors used include a radiative forcing uplift. |

| Item | Value | Unit | Source | Notes |
|---|---|---|---|---|
| Flights - First to/from non-UK | 0.56251 | $kgCO_2e$/passenger.km | DEFRA 2022 – 'Business Travel – Air' tab | Emission factors used include a radiative forcing uplift. |
| Rail – Eurostar Economy Class | 0.0060 | $kgCO_2e$/passenger.km | Eurostar website help centre[2] | |
| Rail – Eurostar Business Class | 0.0060 | $kgCO_2e$/passenger.km | Eurostar website help centre[2] | |
| Rail – Eurostar Premium Class | 0.0060 | $kgCO_2e$/passenger.km | Eurostar website help centre[2] | |
| Rail – First Class | 0.0355 | $kgCO_2e$/passenger.km | DEFRA 2022 'Business Travel – land' tab | Assume National Rail |
| Rail – Standard Class | 0.0355 | $kgCO_2e$/passenger.km | DEFRA 2022 'Business Travel – land' tab | Assume National Rail |
| Accommodation – Burkina Faso | 23 | $kgCO_2e$/night | GreenView Hotel Footprinting Tool[3] | |
| Accommodation – Egypt | 44.2 | $kgCO_2e$/night | DEFRA 2022 'Hotel Stay' tab | |
| Accommodation – France | 6.7 | $kgCO_2e$/night | DEFRA 2022 'Hotel Stay' tab | |
| Accommodation – Kenya | 19.1 | $kgCO_2e$/night | GreenView Hotel Footprinting Tool[3] | |
| Accommodation – Mali | 23 | $kgCO_2e$/night | GreenView Hotel Footprinting Tool[3] | |
| Accommodation – Mexico | 19.3 | $kgCO_2e$/night | DEFRA 2022 'Hotel Stay' tab | |
| Accommodation – Netherlands | 14.8 | $kgCO_2e$/night | DEFRA 2022 'Hotel Stay' tab | |
| Accommodation – Qatar | 86.2 | $kgCO_2e$/night | DEFRA 2022 'Hotel Stay' tab | |
| Accommodation – Rwanda | 22.3 | $kgCO_2e$/night | GreenView Hotel Footprinting Tool[3] | |
| Accommodation – Senegal | 32.4 | $kgCO_2e$/night | GreenView Hotel Footprinting Tool[3] | |
| Accommodation – Singapore | 24.5 | $kgCO_2e$/night | DEFRA 2022 'Hotel Stay' tab | |
| Accommodation – UK | 10.4 | $kgCO_2e$/night | DEFRA 2022 'Hotel Stay' tab | |
| Accommodation – UK (London) | 11.5 | $kgCO_2e$/night | DEFRA 2022 'Hotel Stay' tab | |
| Accommodation – United Arab Emirates | 63.8 | $kgCO_2e$/night | DEFRA 2022 'Hotel Stay' tab | |
| Accommodation – United States | 16.1 | $kgCO_2e$/night | DEFRA 2022 'Hotel Stay' tab | |
| Travel Claims | 0.170480 | $kgCO_2e$/km | DEFRA 2022 'Business Travel – land' tab | Assume Average Petrol Vehicle |
| 3.7 EMPLOYEE COMMUTING | | | | |
| Average Diesel Car | 0.17082 | $kgCO_2e$/km | DEFRA 2022 'Business Travel – Land' tab | |
| Bus | 0.09650 | $kgCO_2e$/km | DEFRA 2022 'Business Travel – Land' tab | |
| Taxi | 0.20826 | $kgCO_2e$/km | DEFRA 2022 'Business Travel – Land' tab | |
| Train | 0.03549 | $kgCO_2e$/passenger.km | DEFRA 2022 'Business Travel – Land' tab | |
| Bicycle | 0.00000 | $kgCO_2e$/km | DEFRA 2022 'Business Travel – Land' tab | |

[2] Eurostar Website: What is the Co2 emission factor per kilometer when using Eurostar? - Eurostar Help Centre
[3] GreenView Hotel Footprinting Tool: Hotel Footprint Calculator (hotelfootprints.org)

| Item | Value | Unit | Source | Notes |
|---|---|---|---|---|
| London Underground | 0.02781 | $kgCO_2e$/passenger.km | DEFRA 2022 'Business Travel – Land' tab | |
| Mixed: Car, train & walk | 0.06877 | $kgCO_2e$/km | Calculated | Average value of mixed transportations |
| Mixed: Train & bus | 0.06600 | $kgCO_2e$/km | Calculated | Average value of mixed transportations |
| Mixed: Train, bus & Taxi | 0.11342 | $kgCO_2e$/km | Calculated | Average value of mixed transportations |
| Mixed: Underground, Bus & Taxi | 0.11086 | $kgCO_2e$/km | Calculated | Average value of mixed transportations |
| Mixed: Car & Train | 0.10316 | $kgCO_2e$/km | Calculated | Average value of mixed transportations |
| CONVERSION FACTORS AND ASSUMPTIONS | | | | |
| Km/mile conversion | 1.609344 | Km/mile | Constant | |
| Pence/GBP conversion | 100 | Pence/GBP | Constant | |
| Liquid UK reimbursement rate | 45 | Pence/mile | Received from Liquid on 2023-06-06 from Natalie Rush via email | |
| Converted reimbursement rate | 0.28 | GBP/km | Calculated | |
| Liquid UK Headcount | 74 | Employees | Received from Liquid on 2023-06-01 from HR Headcount numbers – FY23 -Final.xlsx | |
| Average UK Petrol Consumption | 13.558434 | km/litre | E. Yurday, NimbleFins[4] | |
| Computer Manufacturer Total Revenue | 81 796 924 000 | GBP | Dell ESG Report[5] | |
| Computer Manufacturer Total Scope 1 + 2 | 203 700 | $tCO_2e$ | Dell ESG Report[5] | |
| Average Electricity Price for Liquid UK | 0.6070 | £/kWh | Calculated | |
| Average water daily office consumption | 50 | Litre/employee.day | South Staffs Water[6] | |

[4] E. Yurday, NimbleFins website, Average MPG for Cars UK (2023). Average MPG for Cars UK (2023) | NimbleFins
[5] Dell ESG report. FY22 ESG Report | Dell USA
[6] South Staffs Water. south-staffs-water.co.uk/media/1509/waterusebusiness.pdf

## Appendix 2: Comparison between the old ISO14064-1:2006 and new ISO 14064-1:2018 Standard

| ISO 14064:2018 | | ISO 14064:2006 | |
|---|---|---|---|
| Category | Description | Scope and Category | Description |
| 1 | Direct GHG emissions and removals | Scope 1 | Direct GHG emissions |
| 2 | Indirect GHG emissions from imported energy | Scope 2 | Energy indirect emissions |
| | | Scope 3, category 3 | Fuel- And Energy-Related Activities |
| 3 | Indirect GHG emissions from transportation | Scope 3, category 4 | Upstream Transportation and Distribution |
| | | Scope 3, category 6 | Business Travel |
| | | Scope 3, category 7 | Employee Commuting |
| | | Scope 3, category 9 | Downstream Transportation and Distribution |
| 4 | Indirect GHG emissions from products used by organisation | Scope 3, category 1 | Purchased Goods and Services |
| | | Scope 3, category 2 | Capital Goods |
| 5 | Indirect GHG emissions associated with the use of products from the organisation | Scope 3, category 10 | Processing of Sold Products |
| | | Scope 3, category 11 | Use of Sold Products |
| | | Scope 3, category 12 | End-Of-Life Treatment of Sold Products |
| 6 | Indirect GHG emissions from other sources | Scope 3, category 5 | Waste Generated in Operations |
| | | Scope 3, category 8 | Upstream Leased Assets |
| | | Scope 3, category 13 | Downstream Leased Assets |
| | | Scope 3, category 14 | Franchises |
| | | Scope 3, category 15 | Investments |

## Appendix 3: Significance Assessment

| Source of indirect emissions | Significance criteria | | | | |
|---|---|---|---|---|---|
| | Magnitude | Level of influence | Risk or opportunity | Employee engagement | Recommendation |
| **Indirect Emissions - Purchased electricity** | **Medium** – these emissions form more than 1% of the overall indirect emissions. | **Medium** – can influence these emissions by generating own renewables or use a different electricity provider. | **Low** – Some risk of electricity disruptions or increase in rates. | **Low** – some change in these emissions could come from engaging with employees on responsible energy consumption. | **Include in inventory due to magnitude and influence.** |
| **Purchase of goods and services** | **Low** – these emissions form less than 1% of the overall indirect emissions. | **Medium** – some possibilities for switching to other suppliers or goods with lower emissions. | **Medium** – risk of supply disruptions from climate change related events. | **Low –** employees are not responsible for procurement of goods or services. | **Include in inventory due to influence and risk.** |
| **Fuel- and Energy-related activities** | **Low** – these emissions form less than 1% of the overall indirect emissions. | **Low** – can influence emissions through selection of less emission intensive options such as biofuels and renewable energy sources | **Medium** - risk of energy security and supply disruptions from climate change related events. There is also an opportunity to change these emissions by using renewables. | **Low** – can influence these emissions by generating own renewables. | **Include in inventory due to risk.** |
| **Waste generated in operation** | **Low** – these emissions form less than 1% of the overall indirect emissions. | **Medium** – some operational changes could result in waste minimization or possible to implement recycling initiatives. | **Low** - there is some risk in disruptions to the waste disposal due to climate change related events. | **Low** – few changes in these emissions could come from engaging with employees on responsible disposal of general waste. | **Include in inventory due to influence** |
| **Employee commuting** | **High** – these emissions form more than 1% of the overall indirect emissions. | **Low** – can influence emissions through employee engagement programmes | **Low** - there is some risk in disruptions to the commuting of employees due to climate related events such as flooding | **High** – these emissions could be changed through carpooling, public transport, working from home, and other employee engagement programmes | **Include in inventory due to magnitude and employee engagement.** |
| **Business travel** | **High** – these emissions form more | **Medium** – can influence emissions through selection of less emission | **Low** - there is some risk in disruptions to transport due | **Medium** – these emissions could be changed through lower emission intensive | **Include in inventory due to magnitude, level** |

| Source of indirect emissions | Significance criteria | | | | |
|---|---|---|---|---|---|
| | Magnitude | Level of influence | Risk or opportunity | Employee engagement | Recommendation |
| | than 1% of the overall indirect emissions. | intensive options, or implement virtual meetings and conferences to reduce travel emissions. | to climate related events such as flooding. | strategies or employee engagement programmes | **of influence and employee engagement.** |

## Appendix 4: ISO 14064-1:2018 Standard Reporting

### *Results as per ISO 14064-1:2018*

While Liquid UK currently utilises the GHG Protocol and the ISO14064-1:2006 standards for carbon reporting, Promethium strongly recommends that the company transition to the latest ISO 14064-1:2018 standard for its GHG inventory accounting. The ISO 14064-1:2018 standard represents the most up-to-date and internationally recognised approach for measuring and reporting greenhouse gas emissions. By adopting this standard, Liquid UK can ensure alignment with best practices and enhance the accuracy, consistency, and comparability of its GHG reporting. With the aim of facilitating a smooth transition to the ISO 14064-1:2018 standard, the following table presents a summary of the FY23 GHG emissions inventory in accordance with this updated standard.

**Table 6: FY23 GHG inventory according to ISO 14064-1:2018**

| Category | Description | Group FY23 Emissions |
|---|---|---|
| Category 1: Direct GHG emissions and removals | Stationary Diesel Combustion | 0 $tCO_2e$ |
| | Mobile Diesel Combustion | 0 $tCO_2e$ |
| **Total CATEGORY 1** | | **0 $tCO_2e$** |
| Category 2: Indirect GHG emissions from imported energy | Energy Indirect Emissions | 80.03 $tCO_2e$ |
| | Fuel- and Energy-related Activities | 7.32 $tCO_2e$ |
| **Total CATEGORY 2** | | **87.36 $tCO_2e$** |
| Category 3: Indirect GHG emissions from transportation | Business Travel (Including Accommodation) | 1 201.33 $tCO_2e$ |
| | Employee Commute | 37.07 $tCO_2e$ |
| **Total CATEGORY 3** | | **1 238.40 $tCO_2e$** |
| Category 4: Indirect GHG emissions from products used by organisation | Purchased Goods and Services | 0.25 $tCO_2e$ |
| **Total CATEGORY 4** | | **0.25 $tCO_2e$** |
| Category 6: Indirect GHG emissions from other sources | Waste Generated in Operations | 0.004 $tCO_2e$ |
| **TOTAL CATEGORY 6** | | **0.004 $tCO_2e$** |
| **Total EMISSIONS (Category 1-6)** | | **1 326.02 $tCO_2e$** |

Upon reviewing the data presented in the table above, it becomes apparent that the primary driver of emissions, accounting for 93.4% of the total emissions, falls within Category 3. This category encompasses transportation-related activities, including business travel and employee commuting. In comparison, Category 2, which represents energy indirect emissions, constitutes a smaller yet significant portion, contributing 6.6% to the overall emissions.

Furthermore, considering the ISO 14064-1:2018 standard, the carbon footprint for FY23 is categorised as shown in Table 7.

**Table 7: Summary of FY23 results according to ISO 14064-1:2018**

| GHG Inventory according to ISO14064-1:2018 | FY23 Emissions |
|---|---|
| Category 1: Direct GHG emissions and removals | 0 $tCO_2e$ |
| Category 2: Indirect GHG emissions from imported energy | 87.36 $tCO_2e$ |
| Category 3: Indirect GHG emissions from transportation | 1 238.40 $tCO_2e$ |
| Category 4: Indirect GHG emissions from products used by organisation | 0.25 $tCO_2e$ |
| Category 6: Indirect GHG emissions from other sources | 0.004 $tCO_2e$ |
| **Total Emissions (Category 1-6)** | **1 326.02 $tCO_2e$** |

In FY23, Liquid UK's carbon footprint, as per ISO 14064-1:2018, comprises various emission categories. The most substantial sources of emissions are found in Category 3, where transportation-related activities account for 1 238.40 $tCO_2e$. Included in this category, business travel contributes 1 201.33 $tCO_2e$, followed by employee commuting with 37.07 $tCO_2e$. Additionally, Category 2, energy indirect emissions, play a significant role, with 87.36 $tCO_2e$ associated with purchased electricity and transmission and distribution emissions.