Centre for Live Art Yorkshire

# Environmental Impact Assessment and Action Plan

SAIL

## Introduction

This Environmental Impact is a resource for understanding and addressing the environmental impacts of the Centre for Live Art Yorkshire (CLAY). We believe that the information we've provided will be useful for making informed choices about sustainable practices and resource management, and presents feasible recommendations for actions that CLAY can take.

We'd like to highlight that calculating a carbon footprint isn't an exact science and comes with a certain level of uncertainty. While we've done our best to ensure the accuracy and reliability of our calculations, it's impossible to guarantee that the results are 100% accurate. That said, SAIL has attempted to make this assessment as thorough and reliable as possible, using the most up-to-date data and resources. This has included using the most up to date information from the Department for Business, Energy and Industrial Strategy (BEIS) and their Greenhouse Gas (GHG) conversion factors, as well as the Creative Climate tools by Julie's Bicycle.

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## Scope 1 emissions

Scope 1 emissions in the context of buildings refer to the direct greenhouse gas emissions that arise from sources owned or controlled by the building itself. These emissions include the burning of fossil fuels like natural gas or heating oil for on-site activities such as space heating, hot water generation, and cooking. They also encompass emissions from stationary sources like boilers and generators within the building premises. Additionally, fugitive emissions from refrigeration and air conditioning systems that utilise refrigerants with a high global warming potential contribute to Scope 1 emissions.

In the case of CLAY, the scope 1 emissions are related to the use of a biomass boiler for hot water and heating in the building. To get a figure for calculating the scope 1 emissions, invoices were requested which show that CLAY is charged a flat rate of £62.50 (ex VAT) per month for gas, but after a conversation with the building manager it was revealed that this was just for the biomass boiler.

As there is no weight associated with the cost of the biomass, an estimation had to be used. In this case, attempting to work out how much fuel pellets could be bought for £62.50. This website sells 900kg of wood pellets for £385 (ex VAT), therefore £62.50 could theoretically buy 146.1kg of biomass pellets.

The GHG conversion factor for Biomass pellets is 50.55459 per tonne, and 146.1kg is equal to 0.1461 tonnes. Therefore 50.55459 x 0.1461 = 7.3kgCO2e per month.

7.3kgCO2e per month x 12 months = 88.6kgCO2e (or **0.0886tCO2e**)

**Scope 1 emissions: 0.0886tCO2e (tonnes, Carbon Dioxide equivalent)**

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## Scope 2 emissions

Scope 2 emissions in the context of buildings pertain to the indirect greenhouse gas emissions associated with the consumption of purchased electricity, heat, or steam. These emissions result from the generation of the electricity or heat that the building consumes, which is typically supplied by external sources.

In the case of CLAY, Scope 2 emissions encompass the carbon footprint linked to the electricity procured from the national grid. To get this data, SAIL requested meter readings from the building manager for the site that CLAY inhabits.

From 11th March 2022 – 31st March 2023, the CLAY building used 9132kWh of electricity, however this was a 384 day period, not 365. To roughly calculate the annual usage, this number of 9131kWh was divided by 384 to give a daily figure, and then multiplied by 365 to give 8679kWh of usage over a year period.

To get the carbon footprint of this, the number needs to be multiplied by the 2023 GHG conversion factors from the Department for Business, Energy and Industrial Strategy (BEIS) for National Grid Electricity, which is 0.19338kgCO2e per kWh.

Therefore, 8679 x 0.19338 = 1695.74922kgCO2e, or 1.695tCO2e

**Scope 2 emissions: 1.695tCO2e**

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## Scope 3 emissions

Scope 3 emissions are indirect greenhouse gas (GHG) emissions that occur because of an organisation's activities, but they are outside the organisation's direct operational control. These emissions occur upstream or downstream in the organisation's value chain, including activities such as procurement, transportation, product use, and disposal. Scope 3 emissions are typically the most significant and challenging to measure and manage due to their broad scope and the involvement of external stakeholders.

For CLAY, the following scope 3 emissions were identified:

1. Waste management

2. Water usage
3. Audience travel

## 1. Waste management

There are 2 elements to the waste management for CLAY, Wood Recycling provided by Leeds Wood Recycling, and Business Waste Management by Forge Recycling.

For Leeds Wood recycling, on 16th September 2022, they collected 7 cubic yards of wood from CLAY. In order to use the GHG conversion factors from BEIS, this number needs to be converted into an estimated weight. 7 cubic yards is approximately 5.35188m3, and by using this weight calculator, we can estimate that the weight of the wood was around 2649.18 kg, or 2.6 tonnes.

We can assume that the wood was sent into a "closed loop" recycling scheme, which aims to create a circular economy by minimising waste and maximising the reuse and recycling of wood materials. It involves collecting wood waste from various sources, sorting and processing it, and then recycling or repurposing it to produce new wood products or materials. The scheme emphasises sustainable practices, such as responsible sourcing, efficient resource use, and reducing carbon emissions.

In this system, wood waste is collected and sorted based on quality and type. It undergoes processing steps like cleaning, shredding, or grinding to prepare it for reuse. The processed wood waste is then used to produce new products, such as mulch, biomass for energy generation, composite materials, or even new furniture and flooring. Reuse and reclamation are also important aspects, involving the refurbishment of existing wood products or using wood components in new applications to extend their lifespan.

For wood products, using the GHG conversion factors going into a closed loop recycling system, the kgCO2e per tonne is 21.280. If we assume therefore that 2.6 tonnes of wood were collected, this gives us a figure of 55kgCO2e (or **0.055tCO2e**)

### General waste management

CLAY have 3 waste streams, General (for incineration), Dry Mixed Recycling and Glass recycling. Unfortunately, it wasn't possible to get any information from the waste management contractor on the general and dry mixed recycling that was collected from the premises, and we only have the weight of the glass that was collected over the last year.

The weight of the glass that was collected over the last year was 461kg (or 0.461t), and the kgCO2e per tonne when sending glass into a closed loop recycling system is 21.280kgCO2e, therefore 0.461 x 21.280 = 9.8kgCO2e (or **0.0098tCO2e**)

For general and dry mixed recycling, due to the lack of available data we will assume that 1t of each waste stream was collected for ease of calculation. The same conversion factor applies to both general and dry mixed recycling as glass, so therefore the kgCO2e from general waste to incineration is 21.28kgCO2e (or **0.02128tCO2e**) and for dry mixed recycling is 21.28kgCO2e (or **0.02128tCO2e**)

## 2. Water and Wastewater

Water usage in buildings encompasses various processes, such as heating, cooling, and sanitation systems, as well as irrigation and other water-dependent operations. These activities often rely on energy-intensive infrastructure, such as pumps, boilers, and treatment plants, which contribute to greenhouse gas emissions. By quantifying the carbon footprint associated with water usage, we gain a comprehensive understanding of the hidden environmental costs and can identify opportunities for improvement.

According to water invoices provided by the building manager of CLAY, 2 estimated readings were taken on the 24th March 2022 (2250m3) and 24th March 2023 (2831m3), giving us a usage figure of 581m3 over the year. However, these are estimated readings and unfortunately no other data exists.

The conversion factor for water is 0.149kgCO2e per cubic meter, therefore 581 x 0.149 = 86.569kgCO2e (or **0.086569tCO2e**)

For wastewater, the standard practice is to multiple the usage figure by 0.95 to give a waste water figure of 551.95m3. The conversion factor wastewater is 0.272kgCO2e per m3, therefore 551.95 x 0.272 = 150.1304kgCO2e (or **0.1501304tCO2e**)

## 3. Audience and Artist Travel

Travel is often the biggest scope 3 impact, and although CLAY don't have direct control over how people travel to and from the venue, by understanding how these groups of people are transported they will be able to create strategies around encouraging more sustainable travel habits.

To gain insight into how people currently travel to and from the venue, SAIL were provided with a sheet of information detailing every event that has happened at CLAY over the reporting period, as well as any known travel information. A lot of the artist information was either missing, or only stated where the travel was from and not the method of travel, therefore artist travel will be omitted from this report.

Audience travel wise, an estimation of audience numbers for each event was provided, and using the Creative Climate tools from Julie's Bicycle, the audience travel benchmark for an urban venue was used which is approximately 2.6kgCO2e per audience member

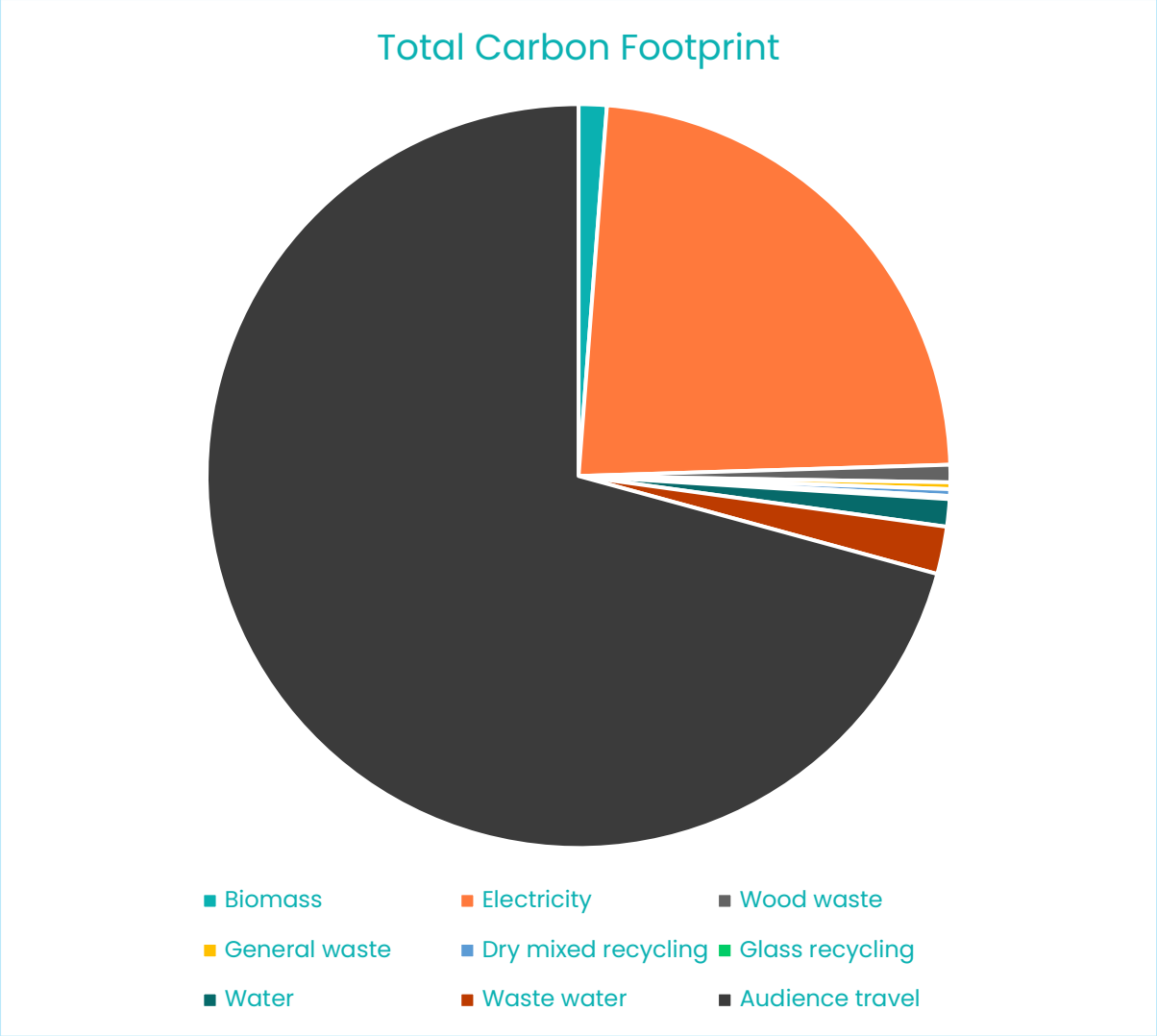
that attends. By multiplying this figure on a per event basis by the amount of people who attended each performance, we arrive at a figure of 5148kgCO2e, or **5.148tCO2e**

### Scope 3 emissions total

| | |
|---|---|
| Wood waste | 0.055tCO2e |
| General waste | 0.02128tCO2e |
| Dry mixed recycling | 0.02128tCO2e |
| Glass recycling | 0.0098tCO2e |
| Water | 0.086569tCO2e |
| Wastewater | 0.1501304tCO2e |
| Audience travel | 5.148tCO2e |
| **TOTAL** | **5.4920594tCO2e** |

### TOTAL CARBON FOOTPRINT

| **Item** | **tCO2e** | **Scope** |
|---|---|---|
| Biomass | 0.0886 | 1 |
| Electricity | 1.695 | 2 |
| Wood waste | 0.055 | 3 |
| General waste | 0.02128 | 3 |
| Dry mixed recycling | 0.02128 | 3 |
| Glass recycling | 0.0098 | 3 |
| Water | 0.086569 | 3 |
| Wastewater | 0.1501304 | 3 |
| Audience travel | 5.148 | 3 |
| TOTAL | 7.2756594 | |




## Environmental Action Plan

Based upon the above findings, the following action plan is recommended. This considers that CLAY do not own the building that they inhabit, and therefore major infrastructure and capital upgrades are not feasible.

**1. Data Capture and Management**

- *Implementing Systematic Data Collection*: One of the initial steps should be to improve the data capture process. Establishing standardised protocols for data collection and management across all operational activities will reduce guesswork and provide a more precise understanding of your environmental impact.

- *Establish Partnerships for Data Sharing*: Work closely with building owners, waste management companies, and utility providers to obtain accurate and regular data. These partnerships can help provide a more precise picture of energy use, waste generation, and water consumption.
- *Staff Training*: Educate staff about the importance of accurate data collection and the role they play in this process. Regular training can improve the consistency and reliability of data capture.

**2. Energy Efficiency**

- *Energy Audit*: While major infrastructure changes may not be feasible, CLAY can still work with the building owners to conduct an energy audit. This can help identify areas where energy usage could be optimised.
- *Energy Efficiency Advocacy*: Encourage the building owners to invest in energy-efficient appliances and systems. This can involve installing energy-efficient lighting and insulation and optimising heating and cooling systems.

**3. Waste Management**

- *Expand Recycling Efforts*: If feasible, expand recycling efforts to include additional waste streams.
- *Waste Reduction Campaigns*: Implement waste reduction campaigns to educate staff and visitors about waste minimisation techniques.
- *Partnerships for Better Waste Data*: Work more closely with waste management contractors to gain accurate data on the waste generated at CLAY.

**4. Water Conservation**

- *Water Usage Data*: Advocate for regular water audits with the building owner to understand water usage patterns and identify potential savings.
- *Promote Water Conservation*: Develop programmes to educate staff and visitors about water conservation and encourage practices such as turning off taps when not in use.

**5. Sustainable Transport**

- *Promote Sustainable Travel*: Encourage staff, artists, and visitors to use public transport, cycle, or walk to the venue by providing information on sustainable transport options.

**6. Education and Engagement**

- *Raise Awareness*: Share CLAY's sustainability commitments and achievements with staff, artists, and audiences. Encourage them to participate in green initiatives at the venue.
- *Collaboration*: Partner with other arts organisations and environmental groups to share best practices and participate in community sustainability initiatives.

**7. Green Procurement**

- *Eco-Friendly Suppliers*: Consider sourcing supplies from vendors that prioritise sustainable practices. This could include everything from recycled paper to eco-friendly cleaning supplies.
- *Local Sourcing*: When possible, source locally to reduce carbon emissions related to transportation. This could apply to food and beverage offerings, office supplies, or materials used in performances.

**8. Green Events**

- *Eco-Friendly Performances*: Consider the environmental impact of the performances held at CLAY. This might involve minimising set materials, recycling props, or using LED lighting for performances.
- *Green Catering*: If CLAY provides food and beverages during events, consider options such as vegetarian or vegan catering, locally sourced ingredients, and minimal packaging to reduce environmental impact.

**9. Climate Advocacy**

- *Public Advocacy*: Use the platform that CLAY has in the community to advocate for environmental causes. This could involve hosting talks on climate change, supporting local environmental initiatives, or joining broader campaigns for environmental policy changes.

## Thank you.

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