

LIVING LONDON | CLIMATE IMPACT REPORT

2024 | AMY JACKSON | IMAGE: LIZ ISLES



LIVING LONDON | AMY JACKSON

ROYAL BOROUGH OF KENSINGTON AND CHELSEA, LONDON, UK

CLIMATE IMPACT REPORT

Credits

This Climate Impact Report for *Living London* was researched, written, and prepared by Amy Jackson. The assessment is based on a combination of direct data collection, industry-standard emissions factors, and insights from sustainability-focused art networks.

Energy and emissions calculations referenced industry benchmarks, including UK Government GHG Conversion Factors and resources from the Gallery Climate Coalition. Consultation with fabricators, specialists transport providers, and material suppliers helped refine impact estimates. Insights and methodologies were informed by engagement with sustainability initiatives such as Artists Commit and Gallery Climate Coalition. Personal research and professional experience in both the arts and sustainable finance shaped the approach to balancing creative and environmental considerations.

This report is intended as a transparent record of *Living London's* environmental impact and a resource for continuous improvement in sustainable artistic practice. The artist would like to thank Phillip Corps, Ben Wood and Vestalia Chilton for their support in bringing *Living London* to life.

Contents

LIVING LONDON | AMY JACKSON..... 2

ROYAL BOROUGH OF KENSINGTON AND CHELSEA, LONDON, UK..... 2

CLIMATE IMPACT REPORT..... 2

 Carbon Emissions:..... 7

 Scope of the analysis..... 8

 Excluded from the scope..... 8

 Active decisions to minimise emissions..... 8

 Accounting for emissions..... 8

 Waste..... 9

 Net benefit analysis..... 10

 Supporting people..... 13

 Collective action..... 14

 Project specific sustainability concerns..... 15

 Conclusion..... 16

PROJECT DETAILS



Image: Living London, Sloane Square, 2024, photography by Liz Isles

Title: Living London, 2024 (Living series)

Artist: Amy Jackson

Presenting Institution/Venue: Kensington + Chelsea Art Week

Project URL: [Living London](#)

Images: [Pictures available for use with credits](#)

Exhibition Type: Public Art Trail

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Introduction

The Climate Impact Report for Living London is more than just an assessment—it's a crucial part of ensuring the sculpture delivers real, lasting benefits. Sustainability isn't just something I measure in my work; it's embedded in the way I create, ensuring that each piece doesn't just highlight environmental issues but actively contributes to solutions.

As part of the Living series, Living London is designed to function as a bio-filter, sequestering carbon, absorbing pollution, and enhancing urban biodiversity. It's a piece that works for the city, not just within it. The report helps to track its impact, identifying strengths and areas for improvement that will shape future sculptures in the series, allowing each new work to push the boundaries of what climate-positive art can achieve.

My background in both fine art and sustainable finance informs this approach—bridging conceptual practice with real-world impact. Beyond environmental benefits, Living London is also a social work, involving SEND children and underrepresented communities in its creation and upkeep. The report ensures that the piece's legacy isn't just symbolic but measurable, making sure that art continues to be a force for real, positive change.

The Climate Impact Report for the Living London sculpture is an essential instrument for evaluating the tangible, long-term benefits of the artwork. It extends beyond simple evaluation, serving as a dedication to integrating sustainability into the core of the artistic process. This methodology ensures that each piece not only enhances awareness of ecological challenges but also actively participates in their resolution.

As an element of the Living series, Living London represents an integrated fusion of artistic expression and environmental functionality. Its bio-filtration functionalities effectively capture carbon, mitigate pollution, and encourage urban biodiversity, thereby establishing it as a vital and constructive element of the urban ecological system. The Climate Impact Report functions as an oversight system, monitoring the sculpture's environmental performance and identifying areas requiring improvement. This evidence-based methodology will guide the design and implementation of subsequent sculptures within the Living series, guaranteeing that every new piece propels the advancement of climate-positive art.

My comprehensive background in fine art and sustainable finance forms the foundation of this approach, merging conceptual artistic practice with quantifiable real-world consequences. Living London exceeds its ecological advantages, additionally functioning as a work of social involvement, engaging children with special educational needs and disabilities (SEND) and marginalised communities in its development and maintenance. The Climate Impact Report assures that the sculpture's legacy is not limited to symbolism, but is rather substantial and quantifiable. Through this dedication to accountability, art persists in serving as an agent for genuine, beneficial change.

Existing Climate Policies

In a world facing environmental crisis, inequality, and overproduction, the role of an artist extends beyond creation—it is a responsibility. My practice questions what art must be made in an age that desperately needs less stuff, ensuring that each project treads lightly on the planet while actively contributing to positive change.

From large-scale public sculptures that filter air and promote biodiversity to participatory community works that challenge consumerism and mental health stigma, sustainability and ethics are embedded in every stage of my process. This commitment isn't just about measurement—it's about tangible impact. That means fair pay for creatives, using recycled and non-toxic materials, minimising travel emissions, and designing artworks with longevity and adaptability in mind.

This [Climate, Environmental, and Social Policy](#) sets out my approach in full, including clear commitments to fair wages, carbon transparency, and interspecies ethics. It is reviewed and updated annually to ensure my work remains accountable, responsible, and forward-thinking.

You can also [read more](#) about the Royal Borough of Kensington and Chelsea's approach to climate change who commissioned aspects of this project by supporting Kensington and Chelsea Art Week (KCAW).

Carbon Emissions:

This analysis was delivered using the Gallery Climate Coalition Data Calculator for impacts¹. Note the the net benefit of the sculpture is considered in the section *Net Benefit Analysis*.

Areas to Calculate:

Travel 0.02 tCO ₂ e	<i>No international or domestic flights were required to realise the commission. All travel undertaken relied upon national rail services and the London Underground.</i>
Energy 0.01 kgCO ₂ e	<i>As the sculpture was installed outside, there was no energy associated with powering the exhibition.</i> <i>The artwork directly consumed a maximum of 34 kWh in electricity through its manufacture. These emissions specifically related to the welding of the recycled steel in the fabrication of its frame.</i>
Shipping 1.55 tCO ₂ e	<i>The most material impact of the sculpture was shipping, space is a challenge in London, so whilst the ideal situation would have been to cultivate, grow and install the moss on site for maximum benefit, this was not possible.</i> <i>In addition, as the sculpture evolved, grew and absorbed rainwater, the weight naturally increased, leading to a larger impact for shipping than originally anticipated.</i>
Other 0.36 tCO ₂ e	Additional Common Areas of Emissions that were considered included: <ul style="list-style-type: none"> • <i>Emissions related to the production of the artwork</i> • <i>Emissions related to meetings and discussions online throughout the process</i> • <i>Travel to and from the sculpture during its production and maintenance by the artist and fabricators</i>

Total Calculated Emissions: 1.92 tCO₂e

Emissions by Category:



Figure 1: Emissions by category. Source: The Gallery Climate Coalition Carbon Calculator.

¹ <https://galleryclimatecoalition.org/carbon-calculator/>

Details about calculated emissions:

For *Living London*, I focused on calculating the most significant emissions within my control, balancing feasibility with impact.

Scope of the analysis

I prioritised emissions sources that were both materially significant and practical to measure, including:

- Fabrication emissions: I estimated the electricity used for welding the 250cm steel ring based on standard kWh consumption per meter of weld.
- Material sourcing and transportation: I factored in the emissions from steel production and transport, prioritising recycled steel where possible.
- Organic components: I calculated the carbon sequestration potential of the moss installation, using available data on CO₂ absorption per kilogram over time.
- My travel: I included emissions from my site visits, installation, and maintenance, tracking public transport and vehicle use.

Excluded from the scope

Some emissions were outside the scope of this assessment due to data limitations and the broader context of the project:

- Visitor travel: Since *Living London* was part of a larger public art trail with most visitors arriving on foot, I excluded these emissions.
- Indirect supply chain emissions: While I assessed material choices, I didn't fully calculate the embedded carbon in tools, adhesives, and auxiliary materials.
- Last-minute adjustments: Unforeseen design modifications, like the need to increase the base size for structural safety, led to additional emissions I couldn't quantify.

Active decisions to minimise emissions

I actively worked to minimise the environmental impact by:

- Choosing sustainable materials: I prioritised recycled steel and moss, a living material that sequesters carbon.
- Sourcing locally: I reduced transport emissions by working with UK-based suppliers where possible.
- Using low-carbon travel: I opted for public transport instead of private vehicles or flights whenever possible.

Accounting for emissions

- Measuring and disclosing impact: I've documented the emissions calculations and areas for improvement to ensure transparency.
- Offsetting and mitigation: The inclusion of moss as a regenerative component helps to actively offset a portion of the project's footprint.
- Future commitments: I've identified key lessons from this project, such as the need for better early-stage planning to prevent last-minute, less sustainable choices. These will inform how I approach materials, fabrication, and logistics in future works.

Waste

Using a material afterlife checklist, the destination of materials used in the project were categorised. Due to the nature of the project, it naturally had a zero waste to landfill model.

Waste Category	Examples of Items	Notes
Reuse: <i>to be reused for the same purpose as the original use</i>	<ul style="list-style-type: none">The sculpture in its entirety	<i>The sculpture is a living breathing piece which will now be on loan to The Sainsbury Collection following KCAW</i>
Repurpose: <i>to be kept, sold, or donated and used for a different purpose in the future</i>	<ul style="list-style-type: none">Spare moss and other flora	<i>Any leftover moss was replanted in other locations or returned to the supplier for resale to maximise carbon sequestration potential.</i>
Storage: <i>items sent to storage, but without a clear plan for immediate reuse or repurpose</i>	<ul style="list-style-type: none">None	
Refuse: <i>item was not used at all and therefore potential waste was avoided</i>	<ul style="list-style-type: none">None	
Recycle: <i>items placed in the recycling bin</i>	<ul style="list-style-type: none">Plastic pots for selected plants	<i>Most plastic containers for succulents were kept within sphagnum moss in order to prevent moisture from accumulating, Any pots which were not used were recycled.</i>
Landfill <i>items sent to a landfill</i>	<ul style="list-style-type: none">None	
Consumable: <i>"consumed" during the exhibition</i>	<ul style="list-style-type: none">Moss, flora and recycled steel	<i>The moss itself was "consumed" in a regenerative way, actively absorbing CO₂ while in place.</i>

Net Benefit Analysis

This section presents an analysis of the estimated carbon sequestration achieved by the moss component of the Living London installation. To provide a conservative and transparent assessment, calculations are based on established scientific literature and reasonable assumptions regarding moss density and sequestration rates. The following analysis aims to quantify the potential carbon benefit over the 120-day exhibition period given that this was the scope used for the emissions calculations. However, it should be noted that given the ongoing life of the piece, carbon will continue to sequester as long as the piece is kept alive.

General Assumptions and Data Sources

For the specific aspect of carbon sequestration, the following assumptions were used:

- **Carbon Sequestration Rate of Moss:** A conservative sequestration rate of 250 g CO₂/m²/year was adopted, reflecting the lower range of estimates found in PPorada et al. (2013)² and Lindo & Gonzalez (2010)^{3,4}.
- **Density of Moss Coverage:** An approximate moss density of 5 kg/m² was assumed, based on sphagnum moss density estimates. Given the sculpture's 500 kg moss mass, this translates to roughly 100 m² coverage.
- **Scaling Over Time:** This results in an annual sequestration of 25 kg CO₂ (100 m² x 250 g CO₂/m²/year). For the 120-day (three-month) exhibition, this equates to approximately 8.22 kg CO₂ total, or roughly 2.74 kg CO₂ per month.

Expanded Scope and Assumptions (Overall Project Valuation)

Beyond carbon sequestration, the broader scope of the analysis incorporates the following:

- **Project Parameters:** A 3m-high moss sculpture installed in Sloane Square.
- **Time Frame:** Three months (t = 0, 1, 2, 3 in monthly intervals).
- **Discount Rate:** An annual discount rate of 3% (i = 3%), with minimal impact due to the short timeframe.
- **Population Exposure:** Approximately 40,000 individuals per day (local residents and foot traffic).
- **Geographic Radius of Ecological Effects:** A 25m radius around the sculpture for direct air filtration and microhabitat impacts.

Main Benefit Categories

1. **Air-Quality Improvements:** Minor reductions in PM_{2.5} and NO₂.
2. **Urban Biodiversity & Pollination:** Additional moss habitat supporting small insects, potential pollinators.
3. **Water Drainage & Retention:** Moss retains moisture, reducing runoff (especially beneficial after rainfall).

² Porada, P., Lenton, T. M., Pöschl, U., & Kleidon, A. (2013). "Estimating global carbon uptake by bryophytes and lichens." *Global Biogeochemical Cycles*, 27(2), 276-285.

³ Lindo, Z., & Gonzalez, A. (2010). "The bryosphere: An integral and influential component of the Earth's biosphere." *Ecosystems*, 13(4), 612-627.

⁴ Turetsky, M. R. (2003). "The role of bryophytes in carbon and nitrogen cycling." *The Bryologist*, 106(3), 395-409.

4. Carbon Sequestration: Small net uptake of CO₂ by moss over 3 months.
5. Community Cohesion & Wellbeing: Workshops to locally cultivate the moss with SEND children, educational tours and local engagement around the sculpture.

Valuation Framework

Net Benefit (NB) is the difference between Present Value of Benefits (NPV_B) and Present Value of Costs (NPV_C)

$$NB = NPV_B - NPV_C, \text{ where } NPV_B = \sum_{t=0}^3 \frac{B_t}{(1+i/12)^t}, NPV_C = \sum_{t=0}^3 \frac{C_t}{(1+i/12)^t}.$$

In this instance,

- B_t = total benefits in month t
- C_t = total costs in month t
- $i/12$ approximates a monthly discount rate given $i = 3\%$ annually

Data & Calculations

Monthly Benefits

$$B_t = B_{Air} + B_{Bio} + B_{Water} + B_{CO2} + B_{Comm},$$

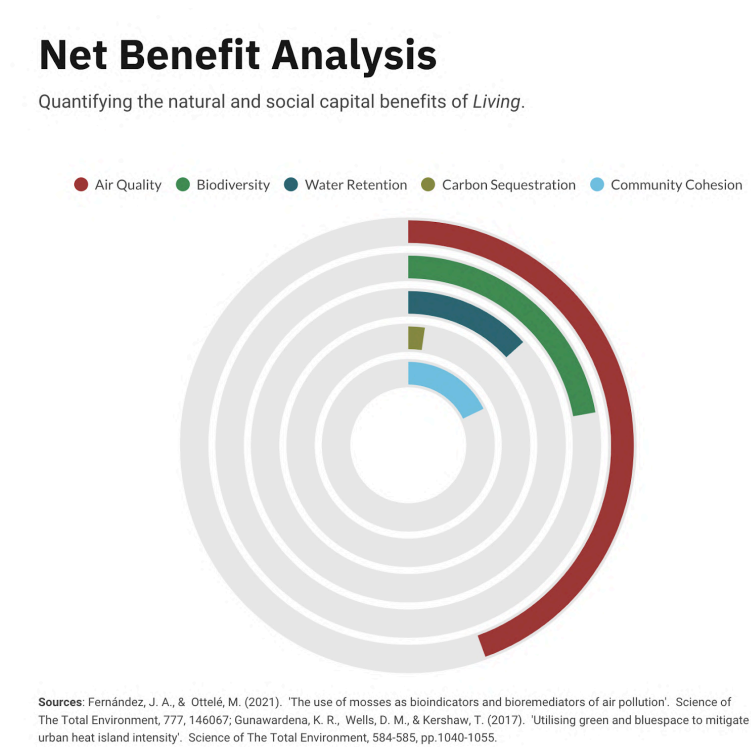
Where each sub-component is monetised conservatively:

1. B_{Air} Air Quality
 - PM_{2.5} Baseline: $18\mu g/m^3$; $\Delta \approx 0.1\mu g/m^3$ over 25m radius
 - NO₂ Baseline: $36\mu g/m^3$; $\Delta \approx 0.3\mu g/m^3$
 - $\beta_{PM_{2.5}} = £0.40/(\mu g/m^3 \cdot person)$; $\beta_{NO_2} = £0.15$
 - Effective daily coverage: 40,000 people
 - Estimated monthly $B_{Air} \approx £2,000 - £2,500$
2. B_{Bio} Biodiversity & Pollination
 - Small habitat for insects/spores: intangible willingness-to-pay $\sim £500/month$
3. B_{Water} Water Retention
 - Moss can reduce local runoff slightly: $\sim £300/month$ of avoided minor drainage costs
4. B_{CO2} Carbon Sequestration
 - Moss sculpture sequesters a modest $\sim 2-3$ kg CO₂/month = $\sim £50/month$ at typical carbon prices

5. B_{Comm} Community Cohesion
- 2 local workshops/month + intangible aesthetic/wellbeing value: ~£400/month

Month t	B_{Air} (£)	B_{Bio} (£)	B_{Water} (£)	B_{CO2} (£)	B_{Comm} (£)	B_t (£)
0	0 (start-up)	0	0	0	0	0
1	2,200	500	300	50	400	3,450
2	2,300	500	300	50	400	3,450
3	2,400	500	300	50	400	3,450

Figure 2: The Net Benefit Analysis of Living London



This integrated analysis demonstrates the multifaceted benefits of the "Living London" installation, extending beyond carbon sequestration to include significant social and ecological contributions. The valuation framework provides a comprehensive assessment, highlighting the project's overall positive impact. This information also highlights the impact of the art sector on climate. Despite best efforts to create a sculpture that actually generates positive impact, shipping of works can quickly reverse the positive benefits achieved through carbon sequestration.

Supporting People

This project was largely a solo effort, with a few contractors brought in for specific aspects. Despite this, ensuring fair treatment and sustainability in labour practices remained a priority:

- **Fair Pay:** Contractors were paid at least the London Living Wage, and *a-n* guidance on fair pay for creatives was followed where applicable.
- **Transparency and Inclusion:** While budget constraints meant the project operated at a financial loss for the artist, efforts were made to support an ethical working environment.
- **Local and Sustainable Sourcing:** Where possible, suppliers were selected based on environmental and ethical considerations, prioritising those with sustainability commitments.
- **Community Engagement:** The project aimed to create an inclusive, accessible experience, engaging local communities in both the creation and maintenance of the sculpture.

In total the amount of money paid to creatives and workers that supported the project totalled £7,350 throughout the duration of the project.

Collective Action

Sustainability in the arts requires a collaborative approach. Through *Living London*, steps were taken to contribute to the wider conversation on climate-conscious artistic practice:

- **Sharing Learnings:** This Climate Impact Report will be shared publicly to promote transparency and encourage other artists and institutions to adopt similar reporting practices.
- **Engaging with Networks:** The project referred frequently to climate-focused arts organisations recommendations and frameworks, including those by *Artists Commit* and *Gallery Climate Coalition*, to align with best practices and refine methodologies.
- **Encouraging Dialogue:** Discussions with fabricators, suppliers, and collaborators focused on integrating sustainability considerations at all stages of production.
- **Future Collaboration:** Moving forward, efforts will be made to actively encourage project partners, galleries, and institutions to adopt their own climate policies and impact reporting.

Commitment to Continuous Improvement

Moving forward, *Living London*, the *Living* series and future projects will incorporate:

- **Improved Planning for Sustainability:** Earlier collaboration with engineers and fabricators to avoid unnecessary material increases.
- **More Rigorous Shipment Planning:** Further reducing avoidable shipment through onsite development where possible.
- **Enhanced Carbon Measurement:** Striving for increased accuracy in future emissions reporting, aligning with *Artists Commit* best practices.

Project Specific Sustainability Concerns

The *Living London* piece, while conceived with sustainability in mind, presents several specific concerns that require careful consideration. Foremost among these is the significant environmental footprint associated with shipping. The transportation of materials, particularly the moss itself, and the final delivery of the completed sculpture to Sloane Square represent a substantial carbon burden. Depending on the sourcing locations, long-distance transport can generate emissions that significantly outweigh the project's carbon sequestration benefits. The logistical complexities of transporting such a large, delicate piece also contribute to increased fuel consumption and potential delays, further exacerbating this issue. Consequently, prioritising local sourcing and opting for land freight, where possible, are crucial mitigation strategies. A thorough calculation and offsetting of the shipping's carbon emissions is also recommended. Noting how immaterial the transportation of workers was compared with shipment of the sculpture, it is recommended that as much work as possible should be performed on site to avoid moving the sculpture around. Once in situ, the environmental benefits of the piece are increased by ensuring the work is on loan for extended periods, as opposed to shorter-term sculpture trails or art fairs.

Beyond shipping, the sustainability of material sourcing and fabrication demands attention. Ensuring the moss is obtained from ethical and sustainable suppliers, and exploring local cultivation, are essential. Similarly, the sculpture's framework should ideally utilise recycled or sustainably sourced materials, with careful consideration given to the environmental impact of their extraction and processing. Fabrication processes should aim to minimise energy consumption and waste, favouring non-toxic, environmentally friendly adhesives and coatings.

The on-site installation and maintenance also present sustainability considerations. Energy consumption for irrigation and other systems should be minimised through the use of renewable energy sources and energy-efficient technologies. Water usage should be carefully managed with efficient irrigation and potential rainwater harvesting. Furthermore, the introduction of a large moss structure into an urban environment could bring about unforeseen ecological consequences. This is why the selection of native moss and flora was critical; a pre- and post-installation study of local insect populations might be useful to capture any urban biodiversity benefits or other impacts that were not accounted for. Therefore, careful monitoring is required to ensure no negative impact on the surrounding environment. In essence, while *Living London* aims to promote sustainability, it necessitates a proactive approach to mitigating the environmental impact of shipping, material sourcing, fabrication, and on-site operations.

Concluding Remarks and Commitment to Continuous Improvement

Reflecting on *Living London*, it has been illuminating to identify the key hotspots of environmental impact, particularly around travel and material choices. Unexpected challenges, such as the necessity to increase the base size for structural reasons and the detour in logistics that resulted in the sculpture being shipped to Mtec instead of directly to the Sainsbury Collection, were beyond my control yet significantly influenced the project's footprint.

A major takeaway is the financial imbalance in sustainability-driven projects—while I ensured all contractors were paid fairly, I personally absorbed a financial loss, a common but unsustainable practice in the creative sector. This highlights the need for systemic change to ensure artists are supported while prioritising sustainable practices.

Moving forward, key areas for improvement include:

- **Enhanced Planning & Coordination:** Addressing logistical inefficiencies earlier in the process to prevent excess travel and material use.
- **Stronger Supplier Collaboration:** Ensuring all partners align with climate-conscious principles to minimise indirect emissions.
- **Ongoing Measurement & Refinement:** Expanding impact tracking to include more granular data on emissions and mitigation strategies.

Ultimately, this project reaffirmed my belief that art should strive to have a net positive impact on the environment. The only way to truly manage this is through rigorous assessment, transparency, and a willingness to iterate and improve. Sustainability in the arts is a journey, not a fixed destination. As always: Don't let imperfection be the excuse for inaction.

