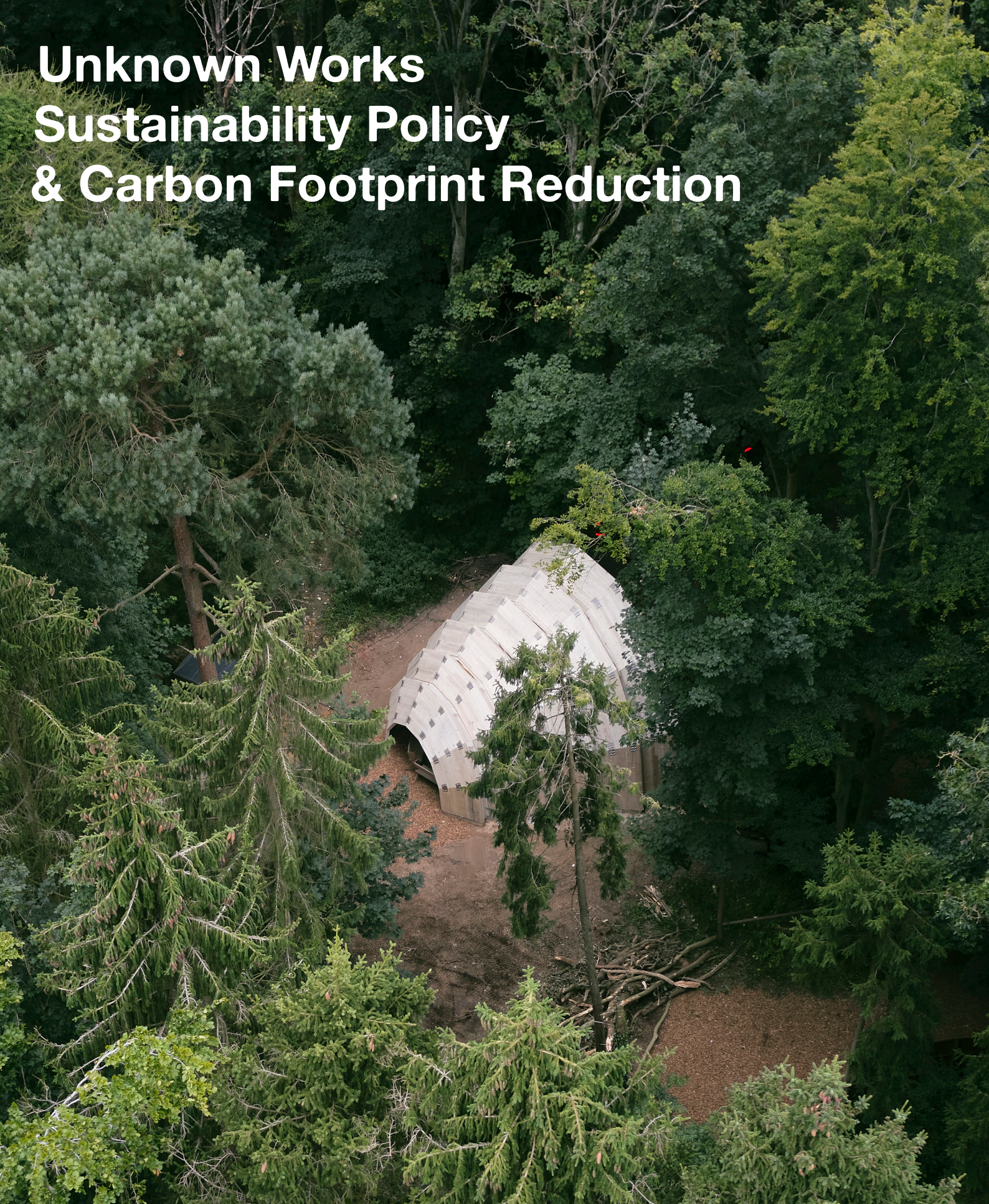


# Unknown Works Sustainability Policy & Carbon Footprint Reduction



Website: [unknown.works](http://unknown.works)  
Email: [hello@unknown.works](mailto:hello@unknown.works)

**London Office:**

Studio 8a, Stamford X,  
Gillett Street, N16 8JH  
London  
+44 (0) 208 191 7134

(IMAGE ON OVERLEAF)

Armadillo  
Designed for re-use and re-assembly  
CLT structure at Houghton Music & Arts Festival, Norfolk

# UW Carbon Reduction Plan

**Report Period** November 2023 - November 2024

**Date:** 21 November 2024

**Authors:** Ben Hayes, Kaowen Ho, Theo Games  
Petrohilos, Robin Baker-Gibbs

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Dropbox\UNKNOWN WORKS\08\_  
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Reduction

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Rev. A - First issue  
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Rev. C - Revised comments  
Rev. D - Revised formatting

# 00 Contents

## 01 Introduction

- 01.01 Purpose of this report
- 01.02 Structure of this report

## 02 Unknown Works

- 02.01 Who we are
- 02.02 Where we are

## 03 Studio Carbon Footprint

- 03.01 Carbon Emission reporting
- 03.02 Carbon Reduction Initiatives
- 03.03 UW Expertise in Net Zero Solutions

## 04 Studio Declaration

- 04.01 Our Promise



# 01 Introduction

## 01.01 Purpose of this report

Unknown Works have produced this report to provide the evidence required to demonstrate that our commitment to Net Zero by 2030.

The scope considered is for operational carbon emissions only, for the period November 2023 to November 2024. Embodied (construction) emissions are not included in this analysis.

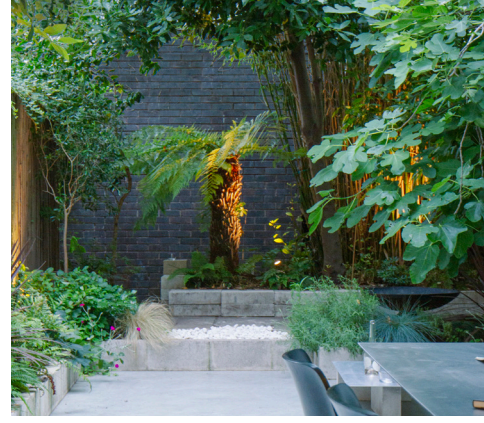
The report presents the building, energy and carbon emissions

## 01.02 Structure of this report

Section 1 of this report provides an introduction to Unknown Works and its current studio. It sets out the business timeline and future plans to reduce Carbon emissions within our studio. Section 2 presents the data and results recorded from the studio. This is done through the use of meter readings and estimated bills. Also included is a discussion on how the studio aims to meet the UKGBC Framework for being highly energy efficient and powered from renewable energy sources. Section 3 considers the benefits of completing any short term fabric improvements to the studio. Section 4 explores our choice of carbon offsetting scheme, explaining our process and future plans to regularly revise our plans.

(Pictured)

Oasis, London. Our commitment to integrating sustainable refurbishments connected to their natural surroundings



# 02 Unknown Works

Unknown Works (UW) is an emerging leader in sustainable design and innovation, winning the RIBA Sustainable Development Award in 2021. UW's commitment aligns with the UN's 17 Sustainable Development Goals and addresses local sustainability targets, actively contributing to climate resilience and environmental health. Known for creating one of the first external mass timber structures in the UK, UW's research-driven designs emphasize environmental harmony.

UW's commitment to low-carbon design has led to partnerships that develop standards of sustainability across institutions and private residences alike, implementing real circular economy and integrating repurpose and reimagination into both materiality and design function.

With Passive House Accreditation, UW has developed specialised design tools focused on carbon targeting, particularly vital for our projects set in rural environments. UW understands that effective design integrates thermal proofing from a project's inception, viewing it as essential to achieving a net-zero carbon future.

The studio specialises in community-driven design and place-making and has extensive experience in navigating complex regulatory landscapes, including collaborations with entities like Natural England to address requirements for Areas of Outstanding Natural Beauty (AONB), Sites of Special Scientific Interest (SSSI), and heritage properties.

UW designs respond to the surrounding landscape, and always intend to merge architecture with nature or the urban environment.

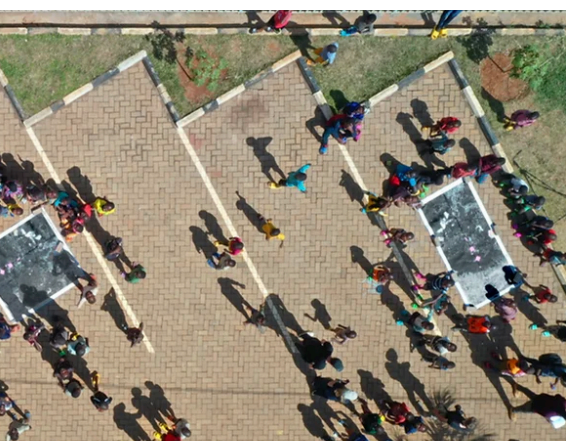
Sustainability is core to the practice, emphasising innovative material use, detailed testing, and field research. Through sustainable residential designs and collaborations with renewable energy and mobility partners, Unknown Works remains at the forefront of ecological responsibility in design, contributing to the industry's progress toward a more sustainable future.

(Pictured)

BrightBox, Uganda. Model for a new mobile community hub/school/medical clinic to be replicated throughout Uganda with the Canadian NGO, The Walking School Bus.



AJ Small Projects 2022  
SHORTLIST



# 02 Unknown Works

## 02.01 Who we are

Unknown Works is an award-winning design studio based in London. Our work spans the fields of architecture, urban design, exhibition design, installation art, and multi media performances. We work at all scales; from the creation of cultural and commercial buildings, residential projects, urban infrastructure, and immersive performance spaces. Sustainability and innovation are at the heart of our design approach.

The studio currently works internationally on a wide range of cultural and commercial projects. UW are experienced in the role of Lead Design and managing the delivery of design stage packages from concept to completion and post occupancy. We ensure that all information is fully coordinated, appropriate level of detail for stage and all client concerns are addressed in a timely manner. As a studio we relish the responsibility for the highest design quality, originality and vision.

As directors of Unknown Works, Theo Games Petrohilos, Ben Hayes, and Kaowen Ho lead the design and creative vision of the practice and share in the day-to-day running of the wider project team and the array of projects that they undertake.

## 02.02 Where we are

With our studio in Dalston, overlooking the view onto Gillett Square - Unknown Works (UW) is proud to be a Hackney local. The sounds of NTS are constantly on our speaker competing with the music outside, whilst the studio is busy testing; making; eating; and designing. The Gillett Square is a truly 'Hackney' microcosm, home to many - creatives, residents, commercial ventures and eateries.

Located in Stamford Works, a repurposed Print Works, UW occupies 330m<sup>2</sup> of studio space. Initially occupying one unit in 2019, to today occupying 4 units.

Fit out in phased refurbishments, UW has always ensured selection of office furniture in line with our fabric first ethos which we apply to our projects.



Theo Games Petrohilos  
BSc (Hons). MArch (Dis) ARB

Founding Director



Ben Hayes  
BSc (Hons). MArch (Dis) ARB

Founding Director



Kaowen Ho  
BSc (Hons). MArch (Dis) ARB RIBA

Founding Director



Sarah Dew-Fribbance  
BSc (Hons). MArch ARB

Senior Architect



Jono Howard  
BSc (Hons). MArch ARB

Architect



Jessie Froman  
BSc (Hons). MArch

Part 2 Architectural Assistant



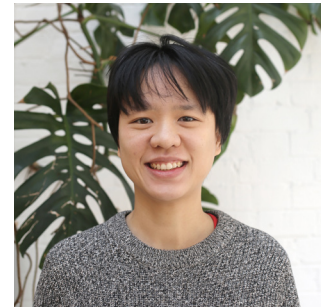
Alex Findley  
BSc (Hons). MArch ARB

Architect



Julia Remington  
BSc (Hons). MArch ARB

Part 2 Architectural Assistant



Chia-Yi Chou  
BSc (Hons). MArch ARB

Part 2 Architectural Assistant



Peter Holmes  
BSc (Hons).

Part 1 Architectural Assistant



Aryan Kaul  
BSc (Hons).

Part 1 Architectural Assistant



Basil Babichev  
BSc (Hons). MArch ARB

Part 2 Architectural Assistant



Sam Field  
BSc (Hons).

Part 1 Architectural Assistant



Maciej Adaszewski  
BSc (Hons). MArch

Part 2 Architectural Assistant



Robin Baker-Gibbs

Studio Manager

# 03 Studio Carbon Footprint

## 03.01 Carbon Emission Reporting

### Carbon Emission Reporting

This section outlines the methodology and results of Unknown Works' first annual Carbon Footprint Reduction Plan, which covers the reporting period from November 2023 to November 2024. This inaugural plan provides a baseline metric against which future carbon footprint reviews and reduction strategies will be measured.

### Methodology

Unknown Works prepared this Carbon Footprint Reduction Plan in-house, adhering to best practices for greenhouse gas (GHG) accounting. Emissions are reported in metric tonnes of carbon dioxide equivalent (CO<sub>2</sub>e), a standard unit that encompasses carbon dioxide, methane, nitrous oxide, and other greenhouse gases, normalized by their global warming potential.

To calculate emissions, we used the 2024 UK Government GHG Conversion Factors spreadsheet (condensed set, v1.1), a trusted and publicly available resource. This ensures that the reported figures align with industry standards and government-recommended methodologies.

### Emission Sources and Scopes

Unknown Works' emissions are categorised according to the GHG Protocol's classification system into Scope 1, Scope 2, and Scope 3:

#### Scope 1: Direct Emissions

These emissions arise from direct consumption of natural gas within the studio. For the reporting year, our natural gas usage totalled 2,900 tCO<sub>2</sub>e, equating to 207.14 tCO<sub>2</sub>e / person.

#### Scope 2: Indirect Emissions

Scope 2 emissions stem from electricity purchased for the studio's operations. Electricity consumption during the reporting period was 3,400 tCO<sub>2</sub>e, equating 242.87 tCO<sub>2</sub>e / person.

#### Scope 3: Other Indirect Emissions

Scope 3 accounts for emissions associated with office supplies, business travel, and water usage. These activities total during the reporting period at 1050 tCO<sub>2</sub>e, equating 75 tCO<sub>2</sub>e / person.

#### Total Emissions

The total GHG emissions for the reporting period amounted to 7350 tCO<sub>2</sub>e, based on an aggregated resource usage of 525 tCO<sub>2</sub>e / person.

#### Reporting Objectives

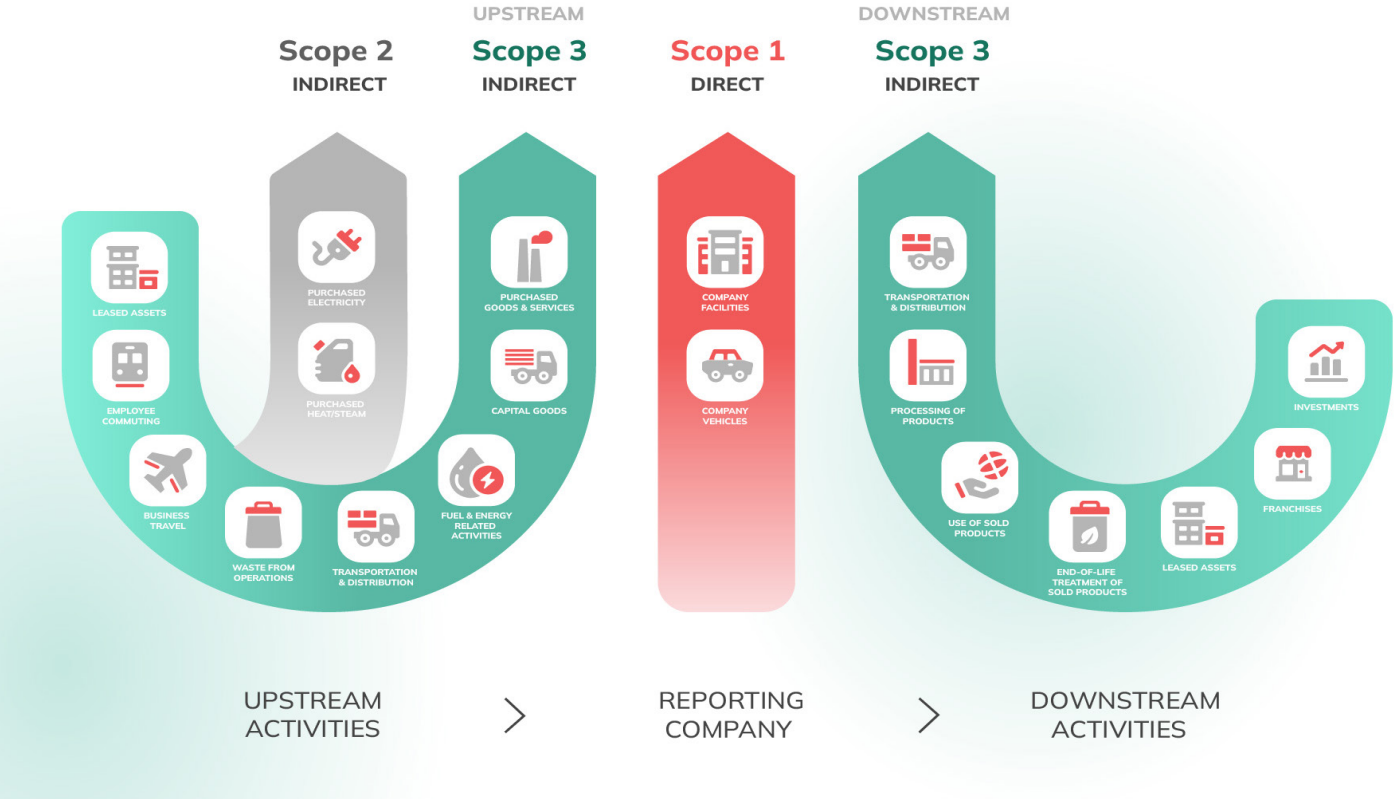
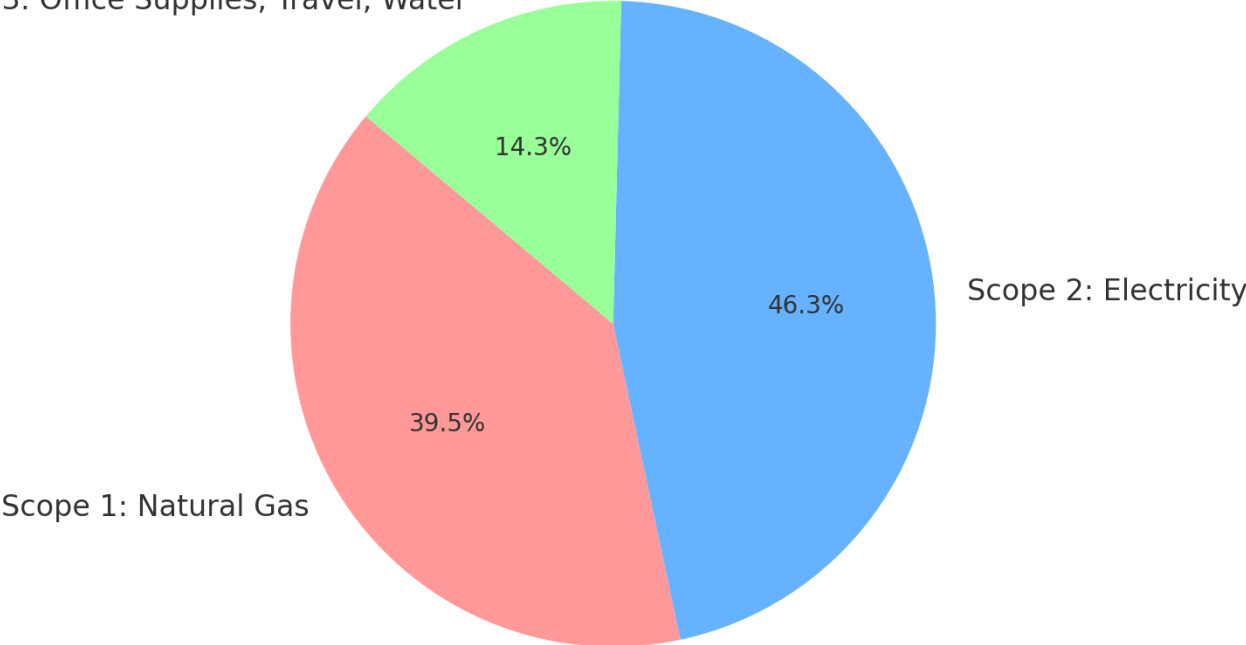
This report establishes a crucial baseline for measuring progress in Unknown Works' sustainability journey. Future iterations of the Carbon Footprint Reduction Plan will document year-on-year reductions in emissions, reflect on the success of implemented reduction strategies, and incorporate updated methodologies as they become available.

By providing transparent and actionable data, Unknown Works commits to adopting best practices in sustainable operations and contributing to the architectural industry's broader decarbonisation efforts.

EMISSIONS	TOTAL (tCO <sub>2</sub> e)	TOTAL (tCO <sub>2</sub> e / person)
SCOPE 1 (Natural Gas)	2900	207.14
SCOPE 2 (Electricity)	3400	242.87
SCOPE 3 ( Other Indirect Emissions)	1050	75
TOTAL USAGE	7350	525

# GHG Emissions by Scope (in metric tonnes of CO2e)

Scope 3: Office Supplies, Travel, Water



# 03 Studio Carbon Footprint

## 03.02 Carbon Reduction Initiatives

### Studio Operations

Unknown Works has implemented several initiatives to minimise energy use and reduce waste, embedding sustainability into the everyday operations of the studio:

### Shared Cooking Practices

A team cooking rota reduces energy consumption and food waste by promoting the efficient use of ingredients and shared meal preparation. The team prioritises locally sourced produce, supporting regional suppliers and reducing food miles.

### Minimising Paper Usage

The studio strives to operate as a paperless office where possible, leveraging digital tools and workflows to minimise reliance on physical documents.

### Plastic-Free Goals

Efforts are ongoing to eliminate single-use plastics and other unnecessary plastic items from the studio environment, contributing to reduced plastic waste.

### Energy Efficiency

All lights and electrical equipment are switched off when not in use to avoid unnecessary energy consumption, reinforcing a culture of mindfulness about energy usage.

### Sustainable Commuting

Team members are encouraged to commute sustainably, whether on foot, by bicycle, or via public transport. Regular exercise and active travel are promoted as part of the studio's ethos of well-being and environmental responsibility.

### Training and Awareness

Unknown Works actively invests in raising awareness and enhancing skills to support sustainability goals:

### Continual Professional Development (CPD)

The studio regularly organises both internal and external CPD sessions focusing on sustainability. These sessions address emerging technologies, methodologies, and best practices in reducing carbon emissions.

### Environmental Induction

All new team members are introduced to the studio's environmental policy as part of their onboarding process. This ensures that sustainability is integral to every team member's role from the outset.

### Collaborative Innovation

The team works collaboratively to identify new and innovative ways to minimise the carbon footprint of the studio's operations and projects. This approach extends beyond studio practices, focusing on the enduring environmental impact of architectural outputs.

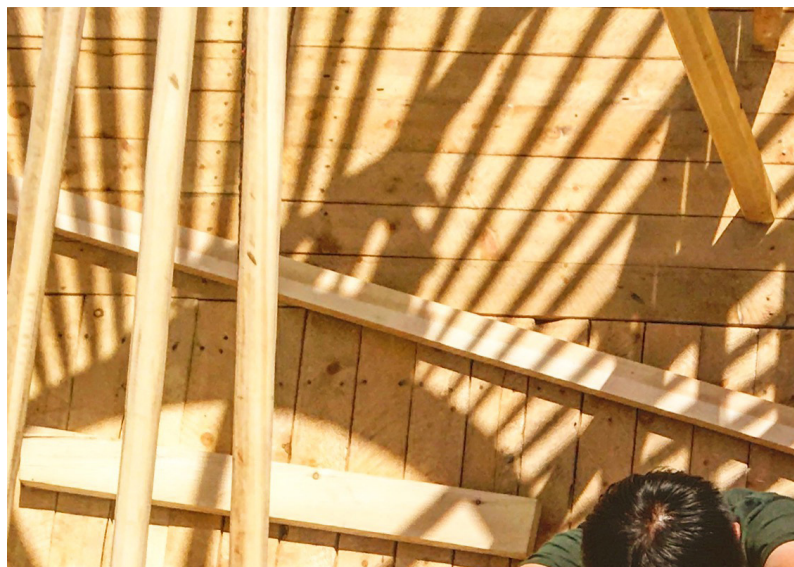
### Challenges and Concerns

Despite these efforts, a key challenge is the studio's limited influence over utility providers. Moving to renewable energy sources is a priority, but progress is constrained by existing contracts and limited options for independent action. Unknown Works is committed to overcoming these barriers and is exploring viable solutions to enhance its use of renewable energy.

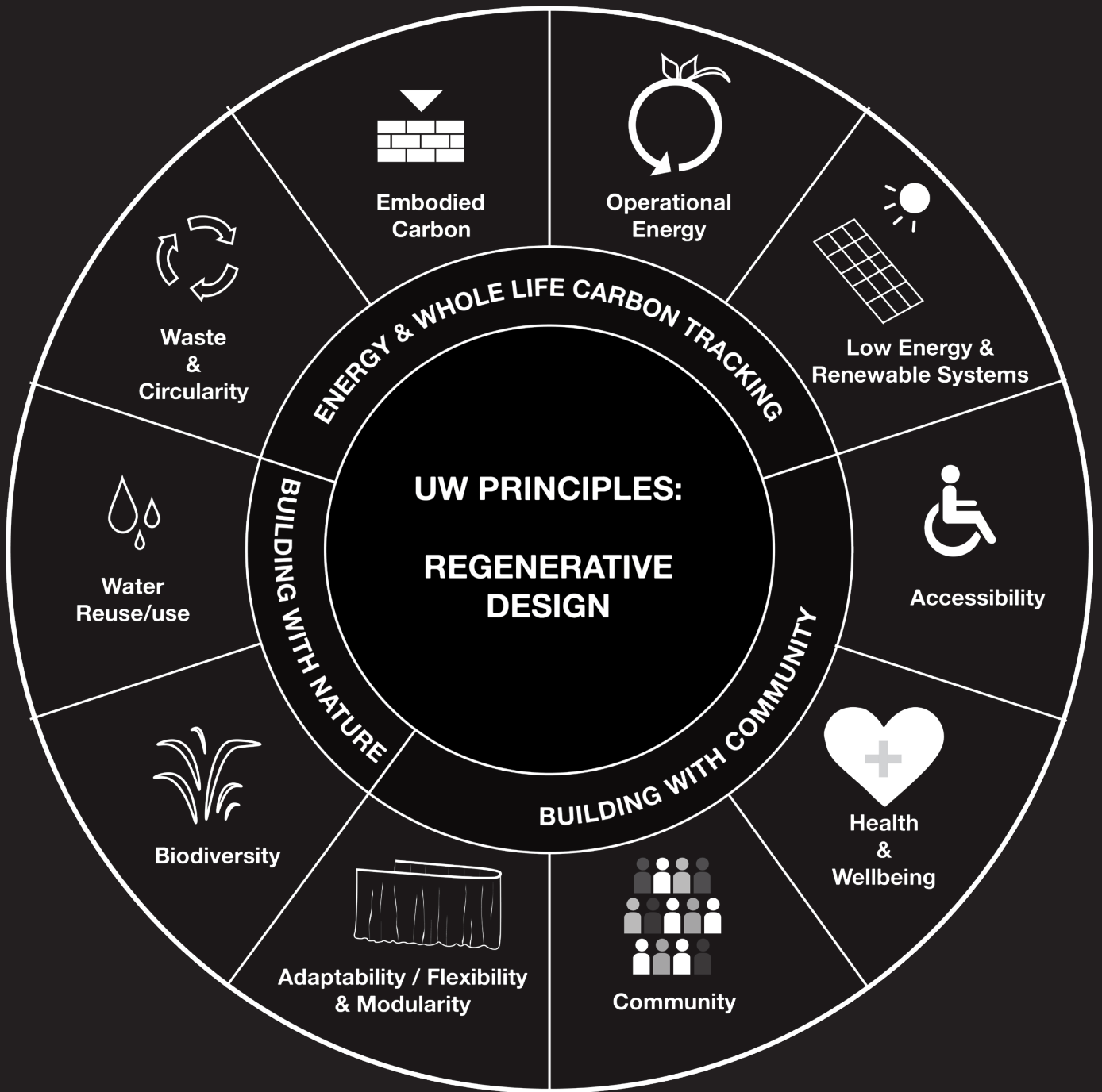
This comprehensive approach reflects the studio's dedication to aligning its operational practices with its broader environmental values, ensuring both immediate and lasting impacts on sustainability.

(Pictured)

Top: Our Studio Engaging in informal lunch time CPD  
Bottom: Prototyping for sustainable social housing









# **UW Expertise in Net Zero Solutions**

# 03 Studio Carbon Footprint

## 03.03 UW Expertise in Net Zero Solutions

### Our Commitment to Sustainability

We are living in a time of unprecedented climate change, and urgent action is needed. As such, Unknown Works are members of the Architects Climate Action Network and have in-house Passivhaus design accreditation. We as a studio are positioning ourselves as a leader in sustainable, low carbon exhibition and gallery design. As a team we have set ambitious environmental goals and scrutinised our impact in three key ways: as an organisation, in our working methods, and in the buildings we design. In all our projects our team are committed to:

- Use of renewable and sustainable materials and technologies
- Reducing carbon dioxide emissions in our projects
- Active use of renewable energy
- Adopting and promoting circularity in our designs
- Set out clear ambitious sustainability targets for each project

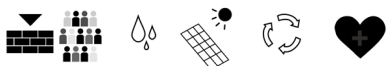
Sustainability is embedded in our design process from the inception of each project. We start with a questioning exercise - we wish to understand the full breadth of issues, constraints, problems, and

opportunities that lie at the heart of the brief, context and client desires in order that the project can do more with less. This evaluation and design process runs through all stages to completion.

### UW Approach to Circular Economy & Carbon

Considering this interrogative approach, we ask: What is refurbishment? UW considers refurbishment works in 2024 to mean thinking through the lens of sustainability. Always embedding a fabric-first approach, material reuse and source tracking. Our pioneering work at the Energy Revolution Gallery at the Science Museum saw the reuse of over 300 redundant shelves and structures due to be landfilled - sourced from the Science Museum's old archive facility at Blythe House, just 3 miles away. Now proudly exhibiting the latest energy saving technologies as display plinths, they have become evidence of the possibilities in material circularity that gives an effectively 'zero carbon' source of building material. The Energy Revolution Gallery is a first exemplar project for the SMG masterplan team in the move toward net zero in 2033. Through an integration of sustainable thinking right from the start, continual internal critical thinking and stage by stage carbon

CLT House, London, UW '23



Brightbox, Uganda, UW '22



Curiosity Cabinet, Kings College, London, UW 2024



Rainforest Research Station, Bodmin Moor, UW '24



The Vortex Jazz Club, Hackney, UW '22



Zeekr Experience Centre, Amsterdam, UW '24



assessments, we are delighted that it is their first negative carbon gallery. The sustainable ambitions of the project have been integrated without compromising on design ambition. These tools and way of thinking are embedded across all UW projects.

**Expertise in Sustainable Design Solutions**

With our work spanning from sustainable retrofits and eco-friendly homes to public facing buildings, research facilities and performance venues. These projects embody our ethos of approach over product, allowing each design to respond uniquely to its environment while adhering to sustainable and community-focused goals. Another example of this is the site specific, situated residential project in Pembrokeshire Coast National Park, West Wales. Here, we took on the challenge of transforming a holiday rental into an exemplar of sustainable retrofit. Our design strategy includes retrofitting the building to significantly improve its energy efficiency and year-round comfort, attracting more tourists and benefiting the community.

The interior design prioritises spatial openness and a strong visual connection to the natural landscape, achieved through carefully framed views rather than excessive glazing, which helps reduce energy loss. Rigid insulation is added to the perimeter walls, enhancing thermal efficiency, while the roof is upgraded with additional insulation and Cambrian slate, known for its resilience and environmental compatibility. For the exterior, we opted for render and slate that reflect traditional Welsh architectural aesthetics. Renewable energy systems, including an air source heat pump and a solar array, further supports the local authority's net zero-carbon target by 2030 and UK's 2050 Net Zero goals. This project exemplifies our dedication to sustainable design that enhances local environments and economies.

**A Principled Practice:**

Believing in a practice that looks beyond data and at the situation and context UW have developed a sustainable toolkit to draw from within their design process, referenced below to illustrate their application.

Architectural Window, RA, London, UW '24



Energy Revolution, Science Museum, London, UW '24



Scotts Refurbishment, Chegdu, UW 2021



Pembrokeshire National Park House, Wales, UW '24



Armadillo Sound Stage, Norfolk, UW '24



Shugi Bangers Recording Studio, Peckham, UW '21



# 04 Studio Declaration

## 04.01 Our Promise

### Impact and Improvement

Environmental impact is central to Unknown Works' design ethos, shaping every stage of our projects. We prioritise the use of natural materials wherever feasible and advocate for design approaches that contribute positively to both the natural and social environments. Our commitment extends to encouraging clients to embrace design elements that foster environmental and social sustainability.

### Examples of Impactful Work:

#### **Brightbox Elevation Community Hub, Uganda**

This project embodies our commitment to creating sustainable, community-focused spaces. The hub provides a clean, secure, and accessible venue for events, medical care, and solar-powered public phone charging. It also incorporates a filtered rainwater collection system. Local fabricators and community groups were employed during its construction, ensuring a positive social and economic impact.

#### **Armadillo CLT Structure, Houghton Hall, Norfolk**

The Armadillo structure demonstrates versatility in design, with the capacity to be reused and repurposed in urban and natural environments alike. Its thoughtful design reflects our dedication to adaptable, sustainable architecture.

### Compliance and Standards

This Carbon Reduction Plan has been prepared in alignment with the latest government guidance and standards.

### Emissions Reporting

Scope 1 and Scope 2 emissions have been recorded in accordance with Streamlined Energy and Carbon Reporting (SECR) requirements. Scope 3 emissions have been reported in compliance with the Corporate Value Chain (Scope 3) Standard and the established reporting framework for Carbon Reduction Plans.

Unknown Works acknowledges its responsibility to exceed legal and regulatory environmental obligations. We are committed to reducing our environmental footprint and continuously improving our environmental performance as an integral part of our business strategy and operations. Regular reviews will ensure ongoing alignment with our goals.

We actively encourage our clients, suppliers, and stakeholders to adopt and support these values, fostering collective progress toward a more sustainable future.

Signed on behalf of Unknown Works



Ben Hayes  
Director